

The Influence of Big Data Analytics on Decision Making in Business: A Study on Forex Companies in the UAE ...By/ Dr. Amir Sayed Hassan, professionally known as Dr. Amir El Araby

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ABSTRACT

This thesis examines how modern technology provides new ways for businesses to do market research focusing on how big data analytics (BDA) affects decision-making and productivity in financial organizations in the UAE (United Arab Emirates). The 1st chapter outlines the goals, objectives, and the current problem in this five-chapter study. The main aim is to understand how BDA impacts Forex Companies (foreign exchange companies) in the UAE, and to improve decision-making process. Also, the study highlights the importance of studying how BDA influences revenue and helps with daily, strategic, and tactical decision-making, and shaping data-driven financial services. A detailed synthesis of existing literature highlights that BDA influences the business process of FSCs by gathering data on changes in market trends and consumer behaviour. The theoretical models discussed including “Information Theory”, “Information Governance Theory”, “Technology Acceptance Model (TAM)”, “Technology Diffusion Theory” and “Data-driven Decision Theory, DECAS”. The research used an interpretive philosophy, inductive approach, and exploratory design with interviews to collect first-hand data on BDA implementation.

1. Introduction

The growing use of data-driven technologies has had a tremendous influence on business operations and market research methodologies. The rapid technological change and the increasing dependence of customers on online platforms have created new opportunities for organisations to implement advanced technologies in their day-to-day operations (Mariani and Wamba, 2020). Big data analytics (BDA) has become one of the most effective technologies of processing large volumes of structured and unstructured data to serve real-time monitoring and decision-making processes (Sharma and Pandey, 2020; Chen et al., 2012; Wamba et al., 2017). BDA integration helps organisations to discover inefficiencies, determine operational bottlenecks, and improve their competitive edge by extracting actionable insights from complex data.

In the financial industry, BDA plays a significant role in enhancing operational efficiency and business activity. Financial institutions are increasingly using analytics tools to strengthen fraud detection, automate financial services, track non-performing assets, and evaluate financial risks (Hasan et al., 2020; Davenport, 2014). Digitalisation trends have propelled these technological advances as people spend considerable time on online platforms and social media applications. These online activities leave huge data footprints that may be analysed by businesses to gain insight into consumer behaviour and market trends. The analysis of real-time data is especially crucial for Forex companies, as the foreign exchange markets are highly volatile and dynamic. By monitoring these market trends, companies can automate their trading processes and increase their profitability while providing customers with customised financial solutions (Buganza et al., 2020).

The development of big data analytics globally underscores its growing relevance across industries. According to statistical reports, the global market value of BDA was estimated at 294.16 billion US dollars and is projected to increase to around 662.63 billion US dollars by 2028 (Business Wire, 2023). The growing use of data analytics software enables organisations to process required data more efficiently, perform real-time analysis, and accelerate decision-making cycles. The capabilities are useful in providing businesses with a stronger competitive advantage and overall organisational performance. On the other hand, despite the potential advantages of BDA, several organisations continue to face difficulties integrating these technologies. Problems with data accuracy, implementation costs, and the availability of sufficient technological infrastructure can affect the productivity and efficacy of decision-making mechanisms (Pappas et al., 2021; McAfee and Brynjolfsson, 2012).

For financial service organisations (FSOs) and financial service institutions (FSIs), profitability and operational efficiency are essential goals. With the implementation of data-driven services, it is possible to reduce operational costs and enhance organisational efficiency and productivity (Chatterjee et al., 2021). Big data analytics and neural networks are advanced analytical tools that enable organisations to process large volumes of data and detect trends that can inform strategic

business decisions. However, the integration of new technologies can disrupt organisational structures and generate resistance among workers. Employees can face challenges in adapting to technological changes or in modernizing their skills to effectively use BDA systems. Therefore, when assessing the efficiency of technological change in the financial services industry, it is critical to analyze the impact of BDA adoption on the decision-making processes of financial services enterprises.

The use of cloud-based big data analytics also enabled organisations to develop customer-insight-based decisions and produce novel services that enhance customer satisfaction and profitability (Liu et al., 2020). Data analytics may also help organisations to analyse employee skills and capabilities to establish a more efficient workplace environment (Mikalef et al., 2021). Research shows that BDA can lead to better customer experiences and proactive risk management as it enables organisations to be aware of shifts in market conditions (Mikalef et al., 2020a). Also, international data indicate that about 37.8% of organisations had already implemented data-driven strategies by 2020, reflecting growing technological flexibility among firms (Taylor, 2023a).

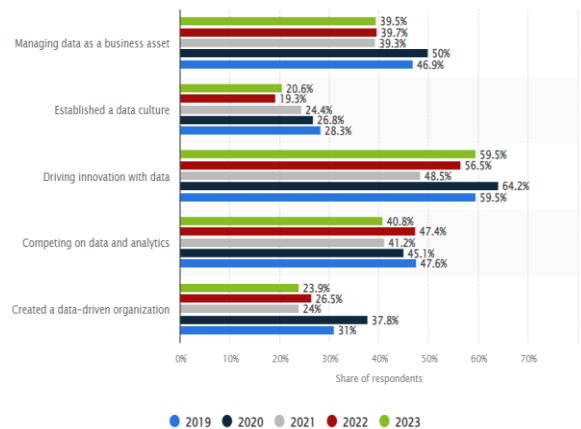


Figure 1. Big Data Adoption across the World

(Source: Taylor, 2023a)

Financial services are a common area where big data analytics are applied to support algorithmic trading systems, which process large volumes of data and can accelerate the trading process (Ahmadi, 2024). Financial institutions can also use real-time data analysis to understand the environmental and social effects of investment choices through monitoring financial transactions. However, there are several challenges in the implementation of BDA in financial organisations. Challenges in effective technology adoption may be associated with data quality issues, insufficient employee training, and inadequate technical knowledge (Deepa et al., 2022). Although, it has also been found that most companies leverage data to create innovations, less organisations are able to compete effectively due to developed analytics capabilities (Taylor, 2023b). It underscores the necessity of enhanced governance, enhanced technological systems, and enhanced training opportunities to facilitate data-driven

decision-making (Al-Afeef et al., 2023).

The BDA systems can be further enhanced by technological advancements such as blockchain, which will improve data security, privacy, and the transparency of financial transactions (Hasan et al., 2020). The detection of patterns in large datasets aids big data analytics as organisations can enhance data integrity by using advanced statistical models and data mining methods to detect fraud (Hung et al., 2020). In the UAE, Forex companies operate in the most dynamic financial environment, where trading data must be constantly monitored. BDA integration can thus offer competitive advantages, as it enables firms to process vast amounts of data and uncover market trends and trade-off opportunities (Edu, 2022).

The Dubai Financial Services Authority (DFSA) and the Securities and Commodities Authority (SCA) are the institutions that regulate the UAE financial sector and supervise many financial institutions and Forex companies (Hatzakis, 2024). With the continued growth of financial markets, the use of advanced technologies becomes even more significant to ensure their competitiveness and operational efficiency. On the other hand, the high-volume data sharing in financial markets also presents the risks of data inconsistency, cybersecurity risks, and governance (Hasan et al., 2020). Research shows that the increased reliance on data analytics has also created higher risks of data migration, third-party fraud, and supply chain maltreatment in financial organisations (Hung et al., 2020). Moreover, the evolving aspects of big data raise additional issues related to compliance and data control (Siddique and Khader, 2022).

The UAE provides a useful context for considering the role of BDA in financial service organisations. The UAE, as part of the Middle East and North Africa (MENA), has witnessed high levels of technology and further evolution in the use of digital financial services (Younis et al., 2021; OHCHR, 2024). The country has financial institutions with diverse customer bases and a range of financial services. By incorporating BDA, organisations can track real-time data and acquire valuable insights on operational activities, enhancing the decision-making process (Vitari and Raguseo, 2020). The performance optimisation associated with BDA also enables organisations to optimise resource use and minimise operational costs (Mishra et al., 2023).

The role of data analytics in financial institutions has been further reinforced by technological innovations like artificial intelligence, chatbots, cloud computing, and natural language processing (Tiwari et al., 2021). For example, chatbots have led to massive cost reductions in customer service at banks, as well as improved response times and service efficiency (Hussain, 2023). Data analytics also supports advanced customer analytics, in which a large volume of financial transactions is analyzed to forecast customer requirements and identify anomalies in financial behaviour (Siddiqui and Khader, 2022).

The increased significance of data-driven innovation in financial markets is further exhibited by investment in financial technology in the MENA region. The investments made in fintech grew substantially between US\$200 million in 2020 and around US\$885 million in 2022 (McKinsey & Company, 2023). However, despite such innovations, Forex companies in the UAE continue to experience difficulties in the implementation of BDA because of insufficient technological infrastructure and the lack of specialised knowledge. Therefore, the analysis of the adoption of BDA in these organisations will be valuable in identifying knowledge gaps and determining the impact of analytics technologies on productivity and revenue generation.

The main research problem is to comprehend the ways in which big data analytics may enhance productivity and decision-making in Forex companies located in the UAE. By analysing big data and forecasting market trends, organisations can provide trusted financial services and improve customer satisfaction (Chen et al., 2021). BDA also aids strategic, operational, and tactical decision-making, as organisations can recognise market opportunities and handle financial risks (Hamilton and Sodeman, 2020). Also, customer satisfaction and organisational performance can be enhanced by studying consumer behaviour and market trends (Mathrani and Lai, 2021).

2. Literature review

2.1 Big Data Analytics in UAE Financial Sector: Industry Overview Theoretical Foundations and Existing Research

The integration of Big Data Analytics (BDA) within the UAE financial services sector, particularly Forex companies, highlights the growing importance of IT governance and data-driven transformation. The expansion of financial inclusion and capital flows in the UAE has strengthened corporate governance and created opportunities for organisations to adopt BDA for delivering customised services (Emara and El Said, 2021). However, challenges such as weak governance frameworks, lack of standardised data protocols, and limited data-sharing practices continue to hinder effective implementation.

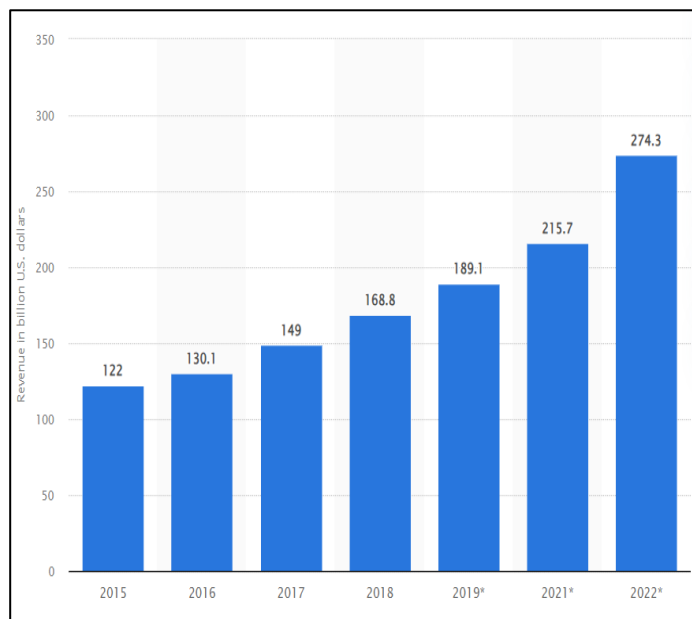


Figure 2.1 Growing Revenue of BDA Market

(Source: Taylor et al., 2023)

Following the statistical data, as demonstrated above (see Figure 2.1), the big data and business analytics market has experienced rapid growth, increasing from US\$189.1 billion in 2019 to US\$274.3 billion in 2022 (Taylor et al., 2023). This reflects the effectiveness of BDA in simplifying large volumes of data and predicting market trends. BDA adoption is prevalent across various industries, including retail and financial sectors, due to its role as a powerful source of business intelligence (Youssef, Eid and Agag, 2022). It supports the collection, analysis, and interpretation of large datasets, enabling organisations to identify patterns and make data-driven decisions. As a result, businesses are able to improve resource allocation and enhance overall operational efficiency. In the UAE, the adoption of AI-powered BDA has enhanced financial decision-making, real-time tracking, and risk management. Events such as Expo 2020 Dubai further demonstrate the practical application of BDA in managing large-scale data and generating actionable insights.

From a theoretical perspective, models such as Information Theory, Technology Acceptance Model (TAM), Technology Diffusion Theory, Information Governance Theory, and the DECAS framework provide a foundation for understanding BDA adoption. These theories emphasise data integrity, user acceptance, governance capabilities, and the integration of human and machine intelligence in decision-making processes.

Existing research indicates that BDA significantly improves operational processes, productivity, and business decision-making. It enables Forex companies to analyse customer behaviour, predict market trends, and design tailored financial products. Additionally, BDA enhances revenue generation, optimises resource allocation, and supports strategic, tactical, and operational decisions. Despite these advantages, challenges related to skills gaps, organisational readiness, and data management remain critical. BDA serves as a transformative tool in the UAE financial sector, enabling organisations to improve efficiency, gain competitive advantage, and foster innovation-driven growth.

2.2 Use of Big Data Analytics as a Disruptive Technology in Businesses

BDA has become a disruptive technology that has revolutionized business operations and decision-making within financial service companies (FSCs), especially Forex companies in the UAE. It is perceived to improve the capabilities using data to help organisations to analyse massive data to better understand market trends, customer behaviour, and investment opportunities (Aker et al., 2022; Lutfi

et al., 2022). BDA helps to evaluate historical Forex market data, enabling companies to make informed investment decisions and forecast market changes using sophisticated algorithms (Rouf et al., 2021; Yu et al., 2021). Also, it simplifies the development of customized financial products and services, enhancing customer satisfaction and competitive edge (Al-Okaily et al., 2023; Ciampi et al., 2021).

BDA integration is also a major opportunity to business such as identifying market trends, exploring customer insights, and developing innovative financial products (Kumar, Shankar and Aljohani, 2020; Kovacs, Ko and Asemi, 2021). It allows Forex companies to streamline their operations, improve their service delivery, and gain competitive advantage using real-time and historical data (Mullins, Holland and Cunneen, 2021; He, Hung and Liu, 2023). Also, the expanding BDA market around the world emphasises its role in facilitating digital transformation and innovation in the financial segments (Taylor, 2024).

Furthermore, BDA is crucial to the process of knowledge acquisition and perception of performance, facilitating the process of data-driven culture and knowledge management (Aljumah, Nuseir and Alam, 2021a; Chaudhuri et al., 2021). It improves organisational learning through merging human knowledge and machine learning insights to enhance decision-making and operational performance (Kumbure et al., 2022). However, adoption can be impeded by issues like perception-performance disparities, employee resistance, and talent deficits (Maley, Dabic and Moeller, 2021; Kitsios, Giatsidis and Kamaridou, 2021). Therefore, organisations need to pay attention to the culture of training, collaboration, and innovation to enjoy the most of BDA and ensure sustainable growth.

2.4 Impact of Big Data Analytics on Business Operations

BDA has revolutionised the operations of business in financial service companies (FSCs), especially Forex companies in UAE, by improving customer analytics, process optimisation, and risk management. BDA also allows firms to collect and analyse large customer datasets to learn customer behaviour and market trends to support personalised financial services and targeted marketing campaigns in terms of customer analytics (Kotras, 2020). It enhances product development, customer interaction, and proactive customer service delivery, in addition to detecting fraud by means of predictive analytics (Aljumah, Nuseir and Alam, 2021b; Bose, Dey and Bhattacharjee, 2023). However, issues to do with data privacy, data breaches, and constraints in quantifying customer loyalty, continue to be a major challenge (Aldboush and Ferdous, 2023; Elia et al., 2020).

In the context of process optimisation, BDA will increase operational efficiency by means of real-time data analysis, automation, and simplified workflow. It improves decision-making, lower operational expenses and allows predictive maintenance, resources efficient utilisation (Deepa et al., 2022; Chahal, 2023; Olabode et al., 2022). However, such problems as skill gaps, organisational resistance, and job displacement concerns with automation may be barriers to its successful use (Mikalef, van de Wetering and Krogstie, 2021; Tschang and Almirall, 2021).

BDA enhances credit risk assessment, fraud detection, and market risk prediction through the analysis of real-time and historical data in terms of risk optimisation (Maja and Letaba, 2022; Liang et al., 2020). It supports organisations to make sound financial choices and enhance operational performance. However, there are shortcomings in mitigating operational risks and reputational risks, such as system failures and compliance concerns (Attaallah et al., 2022; Xiao and Nong, 2021). BDA improves efficiency, productivity and decision-making but poses technical, ethical and organisational challenges.

2.6 Impact of Big Data Analytics on Decision-Making in Forex Companies

Big Data Analytics (BDA) has revolutionized the decision-making process in financial service companies (FSCs), including Forex companies in the UAE by facilitating the data-driven processes of strategic, tactical, and governance (Yaqub and Alsabban, 2023; Garmaki, Gharib and Boughzala, 2023). To make strategic decisions, BDA can inform about historical market data, consumer behaviour, and stock trends, enabling companies to determine the opportunity in the market, create specific financial products, and enter new markets (Song, Li and Yu, 2021; Hasan et al., 2020; Bertello et al., 2021). It also enhances competitive advantage by increasing the effectiveness of resource allocation and the ability to implement innovation strategies on the basis of market trends (Wang et al., 2021; Edu, 2022). However, small Forex companies can be restricted by the lack of computing resources, fast data growth, and skill shortages, which can influence the quality of data and the quality of decisions (Shah, 2022; Fedushko et al., 2020).

BDA increases the efficiency of operations, aiding in resource allocation, pricing policies, and specific marketing campaigns in tactics (Jha, Agi and Ngai, 2020; Grandhi et al., 2021; Niu et al., 2021). The analysis of real-time data enables Forex companies to streamline operational procedures, anticipate market dynamics and enhance the customer interaction. The difficulties encompass dealing with large volumes of data and the trade-off between computing and human intelligence (Eboigbe et al., 2023; Li, Chen and Shang, 2022).

Additionally, BDA supports constructive culture and governance by enhancing data literacy, ethical decision-making, and innovation culture among FSCs (Carmi et al., 2020; Al-Khatib, 2022; FossoWamba et al., 2024). It helps by tracking market trends, fraud detection, and informed business decisions. Challenges in forecasting hierarchical governance changes and the likelihood of demoralizing human judgment during the decision-making process are weaknesses (Salijeni et al., 2021; Albahri et al., 2023). The implementation of BDA enhances strategic and tactical decision-making, operational effectiveness, and governance culture and considers ethical, legal, and market issues in Forex businesses.

2.3 Impact of Big Data Analytics on Productivity: Revenue Generation

Financial service companies (FSCs) and Forex companies in the UAE are included, as Big Data Analytics (BDA) can immensely boost productivity and revenue generation by offering profound insight on customer behaviour and market trends (Hung, He and Shen, 2020). BDA can be used to segment customers by income level, credit risk profile, location, and financial needs, and allow firms to provide custom financial services (Zand, 2020; Edu, 2022). This individualised strategy enhances customer turnover, customer lifetime value, and revenue. Moreover, the analysis of big data assists in creating specific financial products which meet the needs of the market, as well as the preferences of consumers (Padmanaban, 2024).

The BDA strengths in revenue generation are customised financial products, dynamic pricing, and product innovation. Predictive analytics enable companies to create tailored services that satisfy the needs of individual customers, boosting sales and productivity (SoltaniDelgosha, Hajiheydari and Fahimi, 2021; Rosario and Dias, 2023). Dynamic pricing strategies are supported by real-time market data, allowing Forex companies to modify the prices based on the competitor strategies and market trends to maximise profitability (Nunan and Di Domenico, 2022; Bisht et al., 2022). Moreover, BDA supports product innovation by determining unmet customer needs and directing the creation of new financial products based on market trends and target segments (Sundarakani, Ajaykumar and Gunasekaran, 2021). BDA adoption improves productivity, operational efficiency and revenue generation by Forex companies in the UAE.

2.5 Challenges of BDA Adoption in Forex Companies in the UAE

Implementing Big Data Analytics (BDA) in UAE Forex companies is associated with challenges in data quality, technology, skills, organisational culture, and regulatory compliance. The issue of data quality has become significant because large datasets obtained through multiple sources cannot be complete, consistent, or accurate, which influences data-driven decisions and operational efficiency (Corte-Real, Ruivo and Oliveira, 2020; Martinez, Viles and Olazola, 2021; De Santis and D'Onza, 2021). It is challenging to integrate, verify and standardise large amounts of data and remain credible, which reduces the usefulness of BDA in forecasting market trends and consumer behaviour (Padmanaban, 2024; Mohamed et al., 2020).

Another impediment is technological infrastructure because ensuring proper data storage, mining, analytics, and visualisation involve highly sophisticated tools and skills. BDA can be hindered by the absence of technical assistance, inadequate infrastructure, and inappropriate state support (Cabrera-Sanchez and Villarejo-Ramos, 2020; Malhotra and Malhotra, 2023; Hasan, Popp and Olah, 2020). Although UAE invests in AI and technology, the lack of sufficient tools may obstruct the processing of heterogeneous data volumes and the resolution of data silos (Alwaheidi and Islam, 2022; Creation Business Consultants, 2023).

The issue of skill shortage also poses a problem when implementing BDA as companies need access to data scientists, data analysts, and data engineers to interpret data, manage it, and analyse it efficiently. This incompetence may result in the inability to understand the market trends, wrong decisions, and higher expenditures to recruit qualified specialists (Villar and Khan, 2021; Johnson et al., 2021; Chen, You and Chang, 2021).

Adoption is also influenced by organisational culture, inertia and employee reluctance. The collaboration and the automation effort can also be limited by resistance to change, fear of job loss, and cross-cultural differences, which affects the efficiency of operations (Mikalef, van de Wetering and Krogstie, 2021; Tiron-Tudor and Deliu, 2021; Al-Ateeq et al., 2022). Data privacy and legal responsibility are risks to regulatory issues, such as adhering to the UAE Personal Data Protection Law and cyber-security standards (Aldboush and Ferdous, 2023; Dhirani et al., 2023; U.AE, 2024). To overcome these obstacles, a robust technological, legal, and human resource system is necessary to achieve effective BDA adoption and operational enhancement in the UAE Forex firms.

2.7 Research Gap

The research focuses on evaluating the impact of Big Data Analytics (BDA) on decision-making in Forex firms in the UAE. The BDA facilitates automation of business processes and operational efficiency, which is supported in literature (Mikalef and Krogstie, 2020; Ramadan et al., 2020), yet its effects on Forex business processes are understudied. There are gaps in research of organisational inertia, ethical and legal compliance, data quality issues, regulatory challenges, and infrastructure constraints. Although the role of BDA in knowledge management and transparency is recognized (Shabbir and Gardezi, 2020; Gupta et al., 2021; Maley, Dabic and Moeller, 2021), the perception-performance gap, trust, and customer loyalty in UAE Forex firms should be investigated further.

2.8 Operational Framework

Based on the above discussion, the following conceptual framework has been developed.

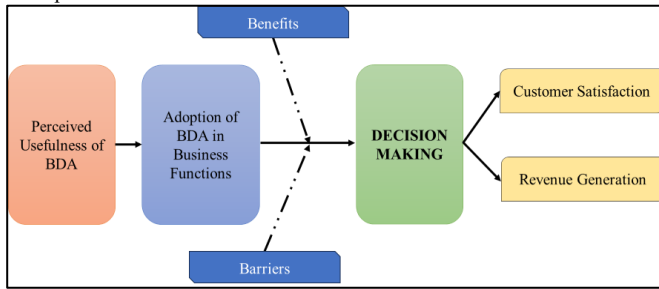


Figure 2. Operational Framework depicting the foundation of this study.
(Source: Developed by Researcher)

Figure 2 of the operational framework is the basis of this research as it involves the perceived usefulness of BDA adoption in the financial service companies (FSCs). The strategic, operational, cost, quality, technological, organizational, people, business functions, and decision-making are key variables. BDA promotes resource optimization, live data handling, predictive analytics, and fraud detection, increasing the efficiency of service and the design of financial products (Rangineni et al., 2023; Lv and Li, 2021; Ren, 2022). The research combines Information Theory, Data-driven Decision Theory (DECAS), Technology Diffusion Theory, and TAM to evaluate the adoption and success of BDA in the FSC operations.

3. Methods

3.1 Research Philosophy

This study employed an interpretivist philosophy, which is based on idealism, to research subjective meanings and experiences (Scauso, 2020). It is opposed to the objectivist position in regards to independent reality, which stressed the role of the researcher as a social actor (Scauso, 2020). This methodology allows exploring complex problems like the use of BDA and organisational decision-making in many ways through various perspectives and contextual knowledge.

3.2 Research Approach

This research used an inductive research design, which entails making observations and relies on data trends to make generalisations and theories (Vears and Gillam, 2022). Being a bottom-up method, it is best applicable to examine phenomena in which little pre-existing research is available. To compile significant findings, the researcher gathered qualitative data by interviews and analysed emerging patterns. This method enables flexibility in the interpretation of the views of the participants and facilitates the emergence of novel theoretical additions. Thus, the inductive method can be considered valid, as it allowed the researcher to produce unique results and further insights into BDA adoption and decision-making mechanisms (Proudfoot, 2023).

Table 3.1 Methodology adopted

Research Philosophy	Interpretive (Scauso, 2020).
Research Approach	Inductive (Proudfoot, 2023).
Research Design	Qualitative Research – Explorative (Hassan and Khairuldin, 2020). Thematic Analysis and Triangulation
Research Strategy	Interview of participants
Time Horizon	Cross Sectional
Data collection method	Semi-structured interview schedule
Sampling	Snowball sampling

Source: Developed by Researcher

3.3 Research design

This study used an exploratory design to explore ill-defined problems concerning the adoption of BDA within financial institutions (Hassan and Khairuldin, 2020). It allowed the researcher to explore data quality concerns, inconsistency risks, and organisational practices within Forex companies. This design can be used to facilitate open-ended research, flexibility, and the creation

of new insights, answering questions like what, why, and how. No descriptive or other interpretive techniques were applied because the study aimed to learn the patterns of real-time BDA data, not to test a theory or existing knowledge (Jain, 2021).

3.4 Sampling

The research used snowball sampling to sample financial managers working in MENA-based Forex firms and actively implementing BDA (Audemard, 2020). A sample size of 30 was chosen, and the data saturation was achieved at 25. The respondents were professionals, whose experience in decision-making processes exceeded five years. Their work offered essential perspectives on BDA adoption, challenges related to adoption, and organisational practices in financial service organisations.

3.5 Methods of data collection

The researchers employed detail interviews as the data collection method, where the sessions were recorded and transcripts exchanged to validate the data to ensure reliability and accuracy (Steele et al., 2022). This approach enabled the researcher to obtain extensive, high-word information on the views, experiences, and issues of managers in terms of BDA implementation, illustrating depth and clarifying unclear answers. Although interviews offer insight, they also possess some disadvantages, including the possibility of bias, incomplete revelations, and assumptions regarding the capabilities or views of participants (Bihu, 2020). Despite these limitations, the approach was crucial in acquiring rich qualitative data that was imperative in explaining the uptake of BDA in financial organisations.

3.6 Procedure and Timeline

A semi-structured interview process was employed by the researcher to gather qualitative, open-ended data on the beliefs, experiences, and perceptions of the participants on the BDA adoption (Mashuri et al., 2022). The research objectives guided questions and were constructed in such a way that they were able to probe into further insights (Naz et al., 2022). Purposeful sampling was used to select the participants, and ethical principles, such as informed consent and confidentiality, were taken into account (Dolczewski, 2022; Aung et al., 2021). To ensure the legitimacy of the process, pilot testing was performed (Gani et al., 2020). The interviews were produced through video conferencing or face-to-face mode and were recorded and transcribed to analyze them (De Villiers et al., 2022).

Table 3.2: Data Collection Timeline

Stage	Week k 1	Week k 2	Week k 3	Week k 4	Week k 5	Week k 6	Week k 7	Week k 8
Preparation								
Pilot Testing								
Main Data Collection								
Transcription & Verification								

3.7 Ethical considerations in this research

The researcher observed ethical considerations in the research. The involvement was voluntary with no coercion or incentives offered, and semi-structured questions were posed to all participants (Xu et al., 2020). Informed consent was received, which enabled respondents to skip questions or drop out at any point (Zech et al., 2022). Privacy and cultural sensitivity were observed, and responses were confidential and not shared with third parties (Colnago et al., 2020). Personal identifiers were removed to ensure anonymity (Amo et al., 2020). The research was conducted in accordance with the university rules and principles that encourage ethical governance and safeguard the rights of participants of the research.

3.8 Proposed data analysis

The thematic analysis was used by the researcher to interpret interview data, detect patterns, and identify meaningful themes (Braun and Clarke, 2023). This open-ended approach records descriptive and phrase-level data that give insights on the experiences, opinions, and practices of BDA adoption among employees (Ayre and McCaffery, 2022). Transcripts, reports, and training materials have been used to generate codes used to develop themes, emphasising project goals, strategies, and regulatory compliance. This was aided by a program called MaxQDA that facilitated effective coding, recognizing patterns, and generating themes of many data types (Allsop et al., 2022). The adaptability, depth, and potential to tackle research questions rigorously led to the selection of thematic analysis (Mezmir, 2020).

3.9 Validity and Reliability

The researcher had implemented measures to ensure validity and reliability. Triangulation primarily involved gathering data through multiple FSOs, which added credibility and trustworthiness (Santos et al., 2020). Interviews were recorded, transcribed and validated through transcripts by participants to provide the correct responses. The reliability was strengthened by pilot testing, well-documented, and standard procedures (Coleman, 2022; Mashuri et al., 2022). Intercoder reliability (ICR) was employed to ensure that there were uniform codes that were used by the researchers. The data saturation was ensured by a lack of new themes in the data and proper time was allocated to the participants to collect and analyze the qualitative data exhaustively, accurately, and reliably.

4. Data Analysis and Findings

4.1 Demographics of Participants

In this survey, the participants are the managers of Forex companies, with age more than 35 years, which includes both male and female. They are experienced and knowledgeable about BDA as well as project involvement. They are also well-informed the organizational structures in MENA regions.

Table 4.1 Demographic Details of Respondents

Age	Frequency	Percentage
30-35	7	28
36 – 40	5	20
40 – 50	7	28
50 +	6	24
TOTAL	25	100
Gender	Frequency	Percentage
Male	15	60
Female	10	40
TOTAL	25	100
Position	Frequency	Percentage
Business Development Executive	6	24
Cyber Security Instructor	4	16
Securities & Derivate Analyst	3	12
Officer, Treasury Risk Intermediate Analyst	6	24
Technical Product Manager	5	20
Others, Customer support team	1	4
TOTAL	25	100
Role	Frequency	Percentage
Audit	1	4
Cyber security management	1	4
Budgeting	5	20
Financial analysis	4	16
Balance sheet creation	3	12
Accounts payable	2	8
Managing product line	2	8
Risk analysis in operations	1	4
Marketing	1	4
Cyber security and risk management	1	4
Cyber security analysis	1	4
Customer communication expert	1	4
Product expert	1	4
Customer assistance manager	1	4
TOTAL	25	100

Source: MS Excel Output

Age : A majority of the respondents are between 30-35 and 40-50 years old,

indicating a relatively mature workforce. The distribution is fairly even across these two age groups, with a smaller proportion in the 36-40 and 50+ age groups.

Gender : The sample is predominantly male, with 60% of respondents being male and 40% female.

Position: Business Development Executive, Officer, Treasury Risk Intermediate Analyst, and Technical Product Manager are the most common positions.

Role: The roles span various functional areas, including finance (budgeting, financial analysis, balance sheet creation, accounts payable), cybersecurity, risk management, marketing, and customer service.

Table 4.2 Research questions corresponding to objectives and interview questions

Research Questions	Research Objectives	Interview Schedule
Why do UAE Forex companies adopt Big Data Analytics? (Question 1)	To understand the motivations of UAE Forex companies for adopting Big Data Analytics.	1. What were the primary reasons your company decided to adopt BDA for your operations?
What are the challenges UAE Forex companies face after implementation of Big Data Analytics in their organisation. (Questions 2 & 3)	To explore the benefits and challenges UAE Forex companies face after implementation of Big Data Analytics in their organisation.	2. In your experience, what have been the most significant benefits of BDA in your company? 3. Consider the UAE Forex market, what are some of the biggest challenges in the market?
How do UAE Forex companies use Big Data Analytics for decision making in Forex trading? (Question 4)	To explore how UAE Forex companies utilize BDA to decision-making in Forex trading activities.	4. How does your company use BDA in the market? 5. Can you elaborate on how the senior management generate ideas on BDA?
What are the challenges in effective decision making after adoption of BDA? (Questions 5 & 6)	To identify the challenges UAE Forex companies, encounter in making effective decisions based on BDA.	6. In your experience, what challenges do you face in making decisions based on BDA? 7. In your experience, how do you handle situations where BDA and human judgment conflict?
Do UAE Forex companies use BDA to understand their customers? (Questions 7 & 8)	To investigate whether UAE Forex companies leverage BDA to gain insights into their customers' needs and preferences.	8. Can you share some examples of how BDA has been used in your company to gain insights into customer behavior? 9. Since implementing BDA, have you observed any measurable increase in customer satisfaction and revenue?
Does this lead to customer satisfaction and revenue? (Questions 9 & 10)	To explore UAE Forex companies' perspectives on the potential impact of BDA on customer satisfaction and revenue.	10. Have you observed any measurable increase in customer satisfaction and revenue since implementing BDA?
What advice would UAE Forex companies offer to other companies considering BDA adoption? (Questions 11)	To identify practical recommendations from UAE Forex companies to other companies considering the adoption of BDA.	11. Based on your experience implementing BDA, what recommendations would you give to other UAE Forex companies considering adopting BDA?

Source: Developed by Researcher

This chapter presents findings from the interview process, conducted with 25 managers. Based on the interview transcript, several codes have been generated, which are presented in the following tables in the thematic analysis section. The chapter consists of the discussion participants' opinions and their viewpoints

regarding the significance of BDA. Research objectives, research questions and all the interview schedules are interlinked to each other and this is depicted in table 4.2. Due to this, interviewers' responses can be used in fulfilling these research objectives. To do this, MAXQDA24 has been used that presents frequency of responses to each code.

4.2 Thematic Analysis

Thematic analysis, as proposed by Braun and Clarke, 2021 is a widely used qualitative research method for identifying, analysing, and interpreting patterns within qualitative data. It is a flexible and versatile approach that is used in a variety of research questions.

Thematic analysis, as proposed by Braun and Clarke, was employed to analyse the qualitative data collected through semi-structured interviews. This method involved a systematic approach to identify, analyse, and interpret patterns within the data.

The following steps were undertaken in the thematic analysis process:

1. **Familiarization:** This involved repeatedly reading and re-reading the transcripts to gain a deep understanding of the data.
2. **Generating Initial Codes:** The preliminary codes were identified that captured key concepts and ideas within the data.
3. **Searching for Themes:** Related codes were grouped into broader themes that represented underlying patterns and meanings.
4. **Reviewing Themes:** Refined and developed the themes to ensure they were coherent, comprehensive, and meaningful.
5. **Defining and Naming Themes:** Named each theme appropriately, to facilitate interpretation and reporting.
6. **Writing Up the Analysis:** Prepared a comprehensive report that presents the identified themes and supporting quotations from the data.

By following these steps, the researcher was able to generate rich and insightful findings that contributed to a deeper understanding of the research topic.

4.2.1 Research Objective 1: To understand the motivations of UAE Forex companies for adopting Big Data Analytics

In order to align the research findings with the research question, thematic analysis method can be applied, as follows.

Table 4.3 Themes and codes for – Why Adopt BDA?

Theme	Codes
Theme 1: Operational Efficiency and Risk Management	Operational Efficiency, Risk Reduction/Management, Security, Analyse vast amounts of data
Theme 2: Improved Decision-Making and Strategic Advantage	Improved Decision Making, Market Insights/Trends, Competitive Advantage, Improved Marketing Strategies
Theme 3: Financial Benefits and Market Expansion	Support Financial Strategies, Wider market share

Source: MaxQDA Output

Table 4.4 Codes and corresponding frequencies for – Why adopt BDA?

Code	Frequency
Analyse vast amount of data	8
Risk Reduction / Management	18
Security	8
Improved Marketing Strategies	8
Improved Decision Making	24
Operational Efficiency	21
Market Insights/ Trends	12
Competitive Advantage	12
Support Financial Strategies	6
Wider market share	3
TOTAL	120

Source: MaxQDA Output

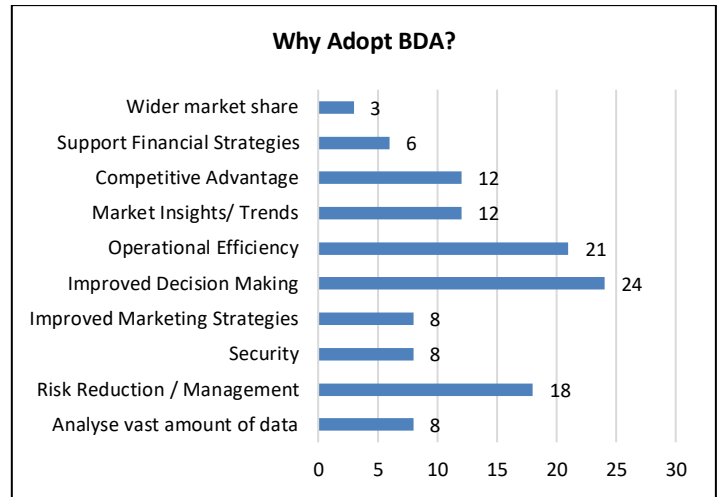


Figure 4.1 Graph showing Frequencies for – Why Adopt BDA?

Source: MS Excel Output

Theme 1: Operational Efficiency and Risk Management

The managers have been struggling to keep up with a large volume of data in the Forex world since it requires precision. One manager has mentioned precise insights obtained from BDA, which helps them to analyse massive data in real-time, through which they can make more informed business decisions. To clarify the reason behind using big data in their businesses, the interview participants have mentioned various facilities. Through this, they can predict the risks, which are likely to occur or have maximum financial impact (Ghasemaghahi and Calic, 2020). Due to this, they can identify vulnerabilities and take timely action to mitigate those risks.

In Forex companies, Risk management analysis is the process of framing strategies to be deployed by the organisations to reduce or eliminate risks. It is a general convention that companies' risk management solely focuses on eliminating and avoiding risks. However, financial institutions accept several risks for generation of maximum revenues and optimum functioning (Wang et al. 2020). In this landscape, managers perform risk management analysis rigorously through qualitative analysis and subsequently, BDA facilitates handling numerical data efficiently. Some of the managers have also mentioned gaining operational efficiency, since they use this in context of cyber security analysis, monitoring Cloud security, Network traffic and so forth.

In the digital world, information flows everywhere, and big data emerges as a great opportunity for business innovation since it serves as a safeguard against potential risks. Participant 4 has opined that -

... *"We adopted BDA to get a clearer financial view. With all the risks and market shifts, having solid data to guide our financial strategies became crucial for staying ahead".....*

In fact, they handle a huge set of data and individuals need valuable insights in business. By adopting this, interview participants can analyse customer behaviour, market trends and operational performance that can advance decision-making processes and optimize operational efficiency. However, security of big data remains a significant challenge for organizations, since this may cause substantial losses to businesses. As Participant 8 mentioned -

.... *"We realized we were missing out on valuable insights hidden within our financial data"....*

The operational efficiency of a business also depends on how the managers makes smarter decisions. In this interview, they admitted that they previously faced many issues in keeping up with the growing volume of data. After implementing BDA in respective departments, they now can make informed decisions in the context of accounting or payments operations. For this reason, BDA is found to be a natural solution to handle work efficiently (Sheng et al. 2021). In Forex companies, BDA helps to identify domains of inefficiency, like waste and bottlenecks, through which firms can predict required action for maintenance. With improved quality of financial analysis and advanced quality control, organizations can make data-driven decisions, which is important for them to stay competitive in the market. As Participant 12 claimed -

...*"With BDA, we can crunch numbers in real-time, spot trends, and make decisions that keep us competitive and our clients happy".....*

Through incorporating BDA, businesses can recognize anomalies and patterns in historical as well as current data. By using these, managers can anticipate risks and

mitigate them before they escalate. Hence, BDA is a beneficial tool for operational efficiency and risk management.

Theme 2: Improved Decision-Making and Strategic Advantage

In a business context, BDA plays an important role in complicated calculations of big data, which reduces crunch numbers in real time. The managers of Forex companies benefit from BDA, since this offers a powerful tool to handle vast amounts of datasets and gain valuable insights subsequently, they implemented BDA, since this volume of data needs a high level of cybersecurity (Nwobodo et al. 2024). On the other hand, one manager has mentioned BDA as a powerful tool that is useful for handling data. Hence, it is the primary reason behind adopting BDA was to stay competitive. One of the interview participants admitted that -

.....“BDA to get a clearer picture of where our money was going and to help us allocate resources more effectively”

To analyse this statement, it can be mentioned that BDA significantly influence Forex trading, since it simplifies predictive modelling and forecasting. In addition, they can continue real-time monitoring of the market and enhance decision support (Awan et al. 2021). For Forex traders, it is a fruitful tool to uncover forthcoming market movements and find patterns, since might not be perceptible through traditional methods of analysis. Although some of the managers have acknowledged that they use it to get a competitive advantage, BDA indeed offers traders insights about high-performing economic events and current trends in real time. Specifically, this tool allows them to react to changes quickly. Therefore, simplifying the decision-making process and management are the most frequent responses from managers. As said by Participant 17 -”We wanted to make smarter decisions and save money. BDA seemed like a good way to do that”.....

In Forex companies, predictive analytics are the main advancement received through employing big data. These firms are required to analyse live prices, trade execution and order flow both past and current. With the help of this, traders can run complex algorithms to make trades based on past wins that remove human error and help to make smarter decisions. Due to this, several managers have proclaimed that their companies incorporated BDA to enhance data security measures since they needed a sophisticated approach to evaluate potential threats or vulnerabilities (Deepa et al. 2022). Hence, in this volatile and fast-moving market, managers use BDA to investigate past trends to reveal patterns and thereby guide future trades. From the interview responses, it can be found that BDA is crucial for Forex companies to get an accurate view of product lines and new markets. For them, data analytics is significant for adapting to the unpredictable market conditions. Through this, management can increase project outcomes and success rates. Hence, BDA facilitates improved decision-making and strategic advantage.

Theme 3: Financial Benefits and Market Expansion

From the interview, it is evident that managers can stay relevant in terms of production and operations. Some of them have claimed that they can get detailed insights to keep their products competitive, with the help of BDA. Primarily, it has become a highly dynamic Forex market, since businesses can identify new opportunities or risks by evaluating data collected from multiple sources. This is why, interviewers have claimed that they stay ahead in the Forex trades since the things move fast in this scenario. In addition, retail chains make use of BDA to investigate trends of consumer purchasing across various geographical areas and demographic groups to illustrate the usage of BD in decision-making, Participant 12 was saying that -

.... “With BDA, we can crunch numbers in real-time, spot trends, and make decisions that keep us competitive and our clients happy”

In the marketing context also, managers intend to stay ahead of the curve. In this regard, interview participants have mentioned that BDA provides valuable insights required to craft targeted campaigns, optimize outreach and thereby promote growth in this competitive market. They get tremendous help from the implementation of BDA. Every company in the MENA region is focused on making the products and services more competitive or relevant in the UAE market. Due to this, they need to leverage data for quicker and smarter decisions. Together with handling solid data to support the moves and making smarter decisions, most of the managers have admitted that BDA facilitates converting data into actionable insights. In accounting and payments operations, managers face a struggle to keep up with the growing volume of data and hence, BDA comes up with natural solutions. By extracting relevant data or information, management can support financial strategies and thereby inform about wider market share.

4.2.2 Research Objective 2: To explore the benefits and challenges UAE Forex companies face after implementation of Big Data Analytics in their organisation.

Benefits of Adopting BDA

Table 4.5 Themes and codes for – Benefits of Adopting BDA

Theme	Codes
Theme 1: Operational Efficiency and Cost Reduction	Cost advantage, Reduce errors, Reduce waste, Quick response, Increases profitability
Theme 2: Improved Decision-Making and Strategic Advantage	Product Decisions/Development, Strategic Advantages, Improved Budget Forecast, Planning, Game changer, Improved Trading Strategies
Theme 3: Enhanced Customer Focus and Satisfaction	Catering to Customer needs
Theme 4: Data-Driven Insights and Predictions	Trend prediction
Theme 5: Quality Improvement and Time Saving	Improves quality, Time saving

Source: MaxQDA Output

Table 4.6 Codes and corresponding frequencies for – Benefits of BDA

Code	Frequency
Cost advantage	21
Improves quality	4
Time saving	6
Product Decisions/ Development	3
Strategic Advantages	3
Reduce errors	9
Catering to Customer needs	9
Trend prediction	7
Improved Budget Forecast	1
Planning	1
Quick response	1
Increases profitability	4
Game changer	11
Improved Trading Strategies	3
Reduce waste	1
TOTAL	84

Source : MaxQDA Output

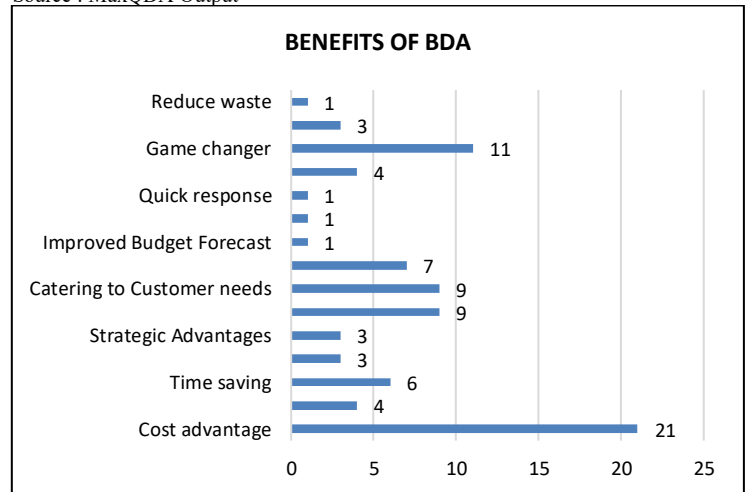


Figure 4.2 Graph showing Frequencies for – Benefits of BDA

Source: MS Excel Output

Theme 1: Operational Efficiency and Cost Reduction

Improving financial operational efficiency and functioning it at an expected level of accuracy requires a holistic, multi-dimensional approach. The interview participants of Forex companies have claimed that, they can use BDA to reduce costs, automate the business processes, improve security standards and optimise services (Jha et al. 2020). They have addressed some critical aspects in Forex businesses, which have been fruitful by consistent operational efficiency of BDA, as participant 4 said, “....Strategically, BDA has helped us forecast better....”

From the responses, it can be found that they obtain maximum cost advantage, when they collect, process and extract valuable insights from diverse and large datasets. In modern landscape, automation has become mandatory. By using BDA, the managers can ensure flawless processes with reduced errors (Awan et al. 2021). Participants have also experienced various risk management solutions obtained from implementing BDA in businesses, which help them to reduce waste, as Participant 18 said, “....Strategically, it’s helped us plan better; operationally, it’s cut down on waste....”

Analysing sensor data is significant for the organisations to foresee mechanical catastrophes and allocate maintenance schedules, through which managers can get quick response. Managers of Forex companies in UAE can detect risks at early stage and thereby take appropriate corrective or preventive actions and hence, this helps to increase organisational profitability.

Theme 2: Improved Decision-Making and Strategic Advantage

In interview, participants have claimed that BDA is used in their organisations for product decisions/development, since it provides perceptions about customer needs as well as current market trends, as participant 21 said, “....it’s helped us get ahead of customer trends....”

To mention strategic advantages of this technological aid, they clarified that developers can examine and adjust their product concepts to develop product design and the process of launching (Ciampi et al. 2021). In order to leverage this innovation, managers involve different tools and techniques to analyse financial data and predict future trends. Through this, organizations can make well-versed decisions. In the present days, companies depend on BDA to identify the existing patterns to enhance budget forecast, since Participant 4 claimed that, “....BDA has helped us forecast better. From the operational viewpoint, it’s made tracking expenses easier....”

For planning, they rely on market trends, customer feedback and sales reports, as these are the game changer to make significant business decisions supported by concrete data (Bahrami and Shokouhyar, 2022). From the participants’ responses, it can be found that data analytic professionals work across different functions, such as marketing, customer support and supply chain to automate report generation and inventory management. This level of automation results in reduced labour-intensive effort and errors that improves trading strategies.

Theme 3: Enhanced Customer Focus and Satisfaction

Interview participants opined that, they can analyse large volume of unstructured and structured data to generate insights on daily basis. The managers of Forex companies manage this data from various sources, such as customer interactions, transaction records, social media and so forth (Mikalef et al. 2020). As per their viewpoint, big data also offers a comprehensive interpretation of customer interactions at different touchpoints, since participant 9 said, “....Operationally, it’s streamlined how we manage product lines.....cutting out inefficiencies, and the quality of our product decisions has shot up....”

To catering to customer needs, they use customer feedback, social media activities, purchase history and online behaviour, since these are relevant data points. Based on these, they effectively use the data to gain a profound understanding of customers in target market (Olabode et al. 2022). Managers of Forex companies believe that BDA enabled them to tailor products or services and therefore the entire customer journey. In this way, they can satisfy individual needs and prospects.

Theme 4: Data-Driven Insights and Predictions

Interview participants have affirmed that, BDA enables them to leverage predictive analytics models for identifying customer needs as well as their historical behaviours. They analyse historical data through these analytics and identify patterns or trends (Yasmin et al. 2020). In order to address future

customer actions, this business innovation is fruitful. Moreover, managers of Forex companies believe that the proactive approach empowers them to stay forward in customer expectations. Through this, they can provide relevant products and services beforehand expressing the needs of customers. This is because, Participant 5 said that, “....We can make better decisions, save money, and give our customers what they want....”

Hence, BDA can enhance customer experience by trend prediction, which supports providing personalized solutions timely (Mikalef et al. 2020). From the interview, it is also clear that managers of these companies understand customer journey, which is crucial for delivering a satisfying and seamless experience. Hence, they realise that BDA allows their organizations to outline entire customer journey across various touchpoints.

Theme 5: Quality Improvement and Time Saving

For quality improvement, managers have integrated enterprise resource planning or ERP, manufacturing execution and supply chain management systems. For all of these business functions, BDA is a one-stop solution (Ciampi et al. 2021). Due to this, the participants mentioned that they incorporate this data analytic to get seamless data exchange at diverse stages. From their discussion, it can also be found that BDA enables Forex companies to make significant decisions to augment product quality and avoid repetitive mistakes effectively. As this provides real-time production data, simultaneously managers can enhance product quality within short time.

Challenges in Adopting BDA

Table 4.7 Themes and codes for – Challenges in Adopting BDA

Theme	Codes
Theme 1: Human Capital Challenges	Concerns about job security, Challenge of upskilling, Resistance to change/Convincing people
Theme 2: Technological and Operational Challenges	Technological Challenges, Time consuming, Challenge in integration

Source: MaxQDA Output

Table 4.8 Codes and corresponding frequencies for – Challenges in Adopting BDA

Code	Frequency
Concerns about job security	1
Technological Challenges	18
Challenge of upskilling	2
Challenge in integration	19
Resistance to change/ Convincing people	30
Time consuming	2
TOTAL	72

Source: MaxQDA Output

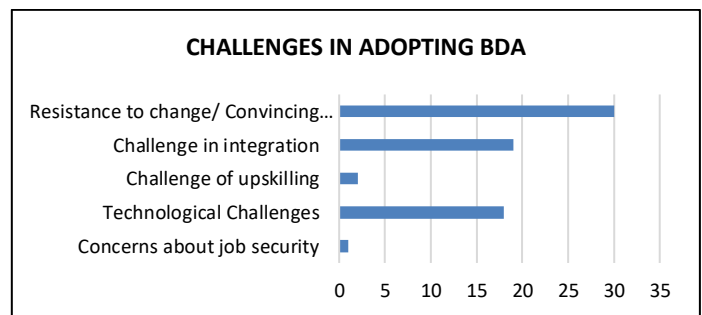


Figure 4.3 Graph showing Frequencies for – Challenges in Adopting BDA

Source: MS Excell Output

Theme 1: Human Capital Challenges

Business leaders are informed that big data is important to produce improved business outcome. However, managers in this interview have shown their concern

about how the struggle to apply technologies perfectly and gain the best outcome. Working on artificial intelligence, natural language processing and machine learning is not possible without hiring a team of expert data scientists (Himeur et al. 2023). This is because, Participant 24 said that, “....Operationally, it has streamlined our processes, reduced manual errors, and improved risk management....”

The effort out by human capital is worthwhile, since data analytics is fruitful for the businesses to identify patterns and trends. These serve as opportunities to make a variety of strategic decisions, like investment into products, marketing campaigns to conduct, target customers and so forth (Nacem et al. 2022). Managers participated in this interview are also worried about the matter that data is often scattered across different departments and systems in structured, semi-structured and even unstructured formats. It can be understood from the comment of participant 23, “....We’ve also seen cost savings by reducing repetitive tasks, and overall, the quality of our customer support has greatly improved....”

For them, it is difficult to evaluate and consolidate. This is also vulnerable to unauthorized utilisation. From the viewpoint of managers, it can be found that they are concerned about job security. Upskilling is another challenge for them to improve the competence of IT department. If the data analytic team is not efficient enough to handle big data, they can resist the change (Nti et al. 2022). Due to lack of accurate, complete, consistent and accessible data, analysis will not be appropriate and thereby it will negatively affect decision-making process. Hence, management of Forex companies have experience talent shortage at a great extent.

Theme 2: Technological and Operational Challenges

The interview participants have mentioned that, they are worried about shortage of technological advancement. In fact, data analytics landscape in the present is continuously evolving and the managers strive to adopt new tools, technologies and emerging techniques all the time (Rehman et al. 2022). It is clear from the comment of Participant 13, “....In terms of cost savings, BDA has helped us optimize resource allocation and identify areas for cost reduction....”

They gain advanced capabilities by incorporating the power of AI and ML and employing efficient data scientists. Without these new tools, all the techniques cannot be relevant and accessible. For some of the organizations, technologies and new analytics might not be compatible with the processes and legacy systems. Due to this, data integration challenges occur, which require transformations to resolve. For them, integrating BDA with the present systems is really a complicated and time-consuming matter. However, Participant 12 claimed that, “....We’ve also saved costs by cutting down on errors, and the overall quality of our trading strategies has noticeably improved....”

Management is worried about the matter that, applying data analytics requires a great extent of change in the organisations that is quite uncomfortable for some employees. Leaders have not become accustomed to functioning big data (Raj et al. 2023). Nevertheless, they save much costs by avoiding operational errors, since the quality of financial insights is sharper than others. They have also several issues with BDA, such as tech issues, particularly integrating it with the existing traditional systems. Due to these organizational challenges, everyone cannot speed up the process and people resist to change. Operating and running BDA in UAE-based organisations is not easy. This is why, it is certainly a big problem for them to upskill the analytics experts so that they get efficient to handle the modern financial reporting systems.

4.2.3 Research Objective 3: To explore how UAE Forex companies utilize BDA to for decision-making in Forex trading activities.

Use Of BDA in Forex Trading Decisions

Table 4.9 Themes and codes for – Use of BDA in Forex Trading Decisions

Theme	Codes
Theme 1: Enhanced Decision Making and Risk Management	Guiding customers in decision making, Use in Risk Management, Identifying cyber threats, Predict Trends, Data Integrity, Use in Market Analysis, Strategic Decisions
Theme 2: Operational Efficiency and Automation	Optimize payment terms, Automate process
Theme 3: Expanded Product Offerings	Wider product range
Theme 4: Improved Trading Execution	Trade Execution

Source : MaxQDA Output

Table 4.10 Codes and corresponding frequencies for – Use of BDA in Forex Trading Decisions

Code	Frequency
Guiding customers in decision making	4
Use in Risk Management	18
Identifying cyber threats	4
Predict Trends	3
Data Integrity	3
Optimise payment terms	1
Automate process	2
Wider product range	4
Use in Market Analysis	23
Trade Execution	11
Used in taking strategic decisions	6
TOTAL	79

Source: MaxQDA Output

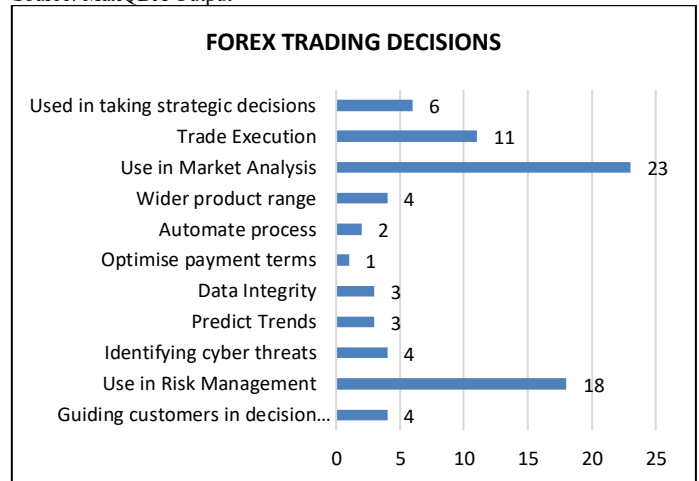


Figure 4.4 Graph showing Frequencies for – Use of BDA in Forex Trading Decisions

Source: MS Excel Output

Theme 1: Enhanced Decision Making and Risk Management

The interview participants have mentioned that big data has ability to support different stages of company’s decision-making process. From their discussion, it is clear that, they make use of predictive analysis, as this is helpful for them to reduces trial-and-error approaches through data integrity (Bag et al. 2020). The use in market analysis is also valuable in this field, since BDA can compile comprehensible data sets that leads to better decision-making process. This is because, participant 3 said, “....Tech issues were a pain, and getting everyone comfortable with the new tools took some effort....”

For this reason, the approach of managers includes a detailed analysis of business impact to assess the effects of potential disruptive events on key business operations and functions.

From the managers’ comments, it can also be found that they rely on BDA to understand current market trend, perform competitor analysis and know current stage of any product in lifecycle. These crucial decision-making strategies are valuable for success of their Forex organizational success (Gupta et al. 2020). For risk management, the managers predict the potential risks to occur and their maximum financial impact. They conduct risk benefit analysis to measure their potential benefits, which indicates associated risks and ensures informed decision-making.

Theme 2: Operational Efficiency and Automation

The interview session with Forex companies’ managers offers valuable insights

about BDA implementation. This is necessity to improve operational efficiency, as data analytics hired by the companies have shifted their tasks from manual or time-consuming to automated and more efficient systems (Conboy et al. 2020). This is evident from the comment of participant 11, *“....Technologically, ensuring data accuracy and dealing with legacy systems posed significant hurdles, especially in maintaining the speed and reliability required for Forex trading....”*

Often, this frees up time, valuable resources and efforts for value-add and strategic activities. Using big data analytics for more informed decision-making starts with collecting and evaluating relevant data from different sources. These include customer feedback, market trends and sales reports (Yasmin et al. 2020). As the companies have automated overall process, they can improve logistics supply chain and inventory management, since participant 22 said that, *“.... The biggest challenge was getting everyone on board with the idea of using data to drive product decisions....”*

In today’s forward-thinking business landscape, data is mainly generated at unprecedented rate and subsequently, it has become essential to harness the potential of BDA and maintain a competitive edge. This is evident from the responses of interview participants. In order to optimize payment terms, the managers implement various methods (Yu et al. 2021). For performing this, they negotiate the more preferable terms with suppliers and offer discounts for their early payment. Automating the payment processes has been helpful for them to accelerate transactions process.

Theme 3: Expanded Product Offerings

In the interview, managers have claimed that they can segment target customers on the basis of their demographics, values, purchase history and lifestyles. This process of useful for them to understand the level of interaction of each segment with products or services they offer (Ciampi et al. 2021). As per the standpoints of respondents, it is clear that, BDA supports sentiment analysis, which is another useful tool to understand how target audiences perceive company’s brand or products. This is evident from the opinion of participant 24, *“.... We also faced organizational barriers, such as integrating BDA with our existing systems and processes....”*

Through this, the Forex companies can address concerns and reinforce their positive experiences. In particular, they get many helps to forecast the trends of markets, prices, customer behaviour and so on. In this regard, they implement Business Analytics to upcoming ever-changing competitive environments (Suoniemi et al. 2020). Hence, as per the viewpoint of interview participants, BDA improves decision making. With the help of BDA, they can aggregate data in systematic manner. Companies can get meaningful answers to the questions regarding sales performance and impact of targeted campaigns or advertisements.

Theme 4: Improved Trading Execution

In the field of financial markets, information is regarded as power. Investors and traders constantly seek opportunities to gain valuable insights, which are important for them to make more crucial decisions and eventually, they increase profitability (Gupta et al. 2020). Interview participants have captured this level of technological revolution to transform trading landscape. The reason is mentioned by participant 21, as *“....Tech-wise, syncing everything up wasn’t easy, but we got there in the end....”*

Managers of Forex companies get many benefits, which extend beyond outdated trading strategies. Furthermore, it can be found that big data in context of trading can use immense volume of unstructured and structured data generated by numerous sources, such as social media, financial news outlets, market exchanges and so forth (Mikalef et al. 2020). They collect the data, process and evaluate by using technologies and advanced algorithms to extract actionable perceptions.

Data Triangulation

Integrating the power of BDA into payment processing system has revamped the procedures of many businesses. Companies have utilised advanced reporting techniques, to make informed decisions and personalize their marketing strategies. Based on that, they consider product offering and optimize further pricing models (VenkateswaraRao et al. 2023). In addition to this, seizing big data is important for the companies to take security measures of improved version, which ensures effective fraud detection. This approach of predicting trends is not preferable for most of the organisations, as it waste precious time and resources to figure out. Instead, managers can identify product needs, target market and advertising spend and gain consumer insights (Jamaludin et al. 2022). Due to this matter, it is proved that BDA is relevant in business context for market analysis, risk management, algorithm, sentiment analysis and efficient execution of trades.

Table 4.11 Themes and codes for – Informed Decision Making

Theme	Codes
Theme 1: Strategic Decision-Making	Strategic Decisions, Marketing Strategies, Risk Management, Evaluate trading strategies, Security Strategies
Theme 2: Operational Efficiency and Financial Performance	Product Decisions, Financial Decisions
Theme 3: Customer Focus and Satisfaction	Customer Satisfaction

Source : MaxQDA Output

Table 4.12 Codes and corresponding frequencies for – Informed Decision Making

Code	Frequency
Customer Satisfaction	4
Product Decisions	2
Financial Decisions	11
Strategic Decisions	18
Security Strategies	2
Marketing Strategies	10
Risk Management	9
Evaluate trading strategies	1
TOTAL	57

Source : MaxQDA Output

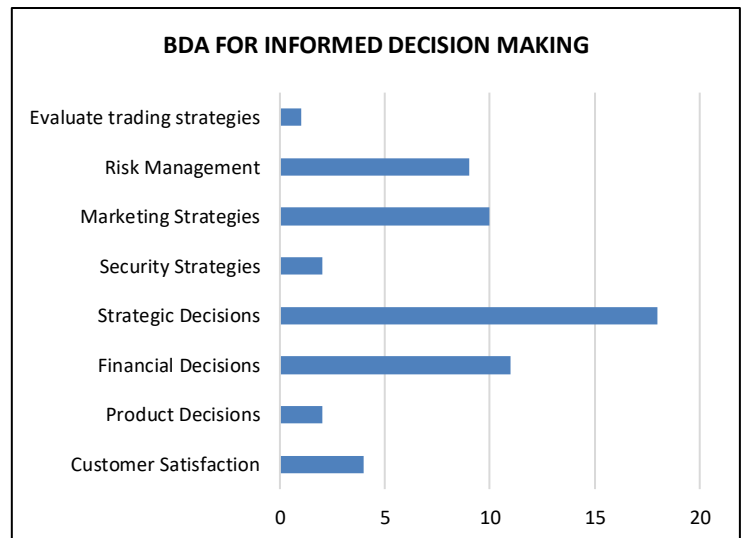


Figure 4.5 Graph showing Frequencies for – Informed Decision Making

Source : MS Excel Output

Theme 1: Strategic Decision-Making

The interview participants have discussed how BDA is helpful to elevate the impact generated by statutory provisions of diverse companies. Predicting and continuing assessment of macro trends of the current markets is a difficult task for improved financial analysts. Macroeconomic features of risk management are valuable for these managers to gain many facilities with the arrival of BDA (Koot et al. 2021). Making strategic decisions has become easier for them. However, using traditional data to make predictions and evaluate has many negative effects,

as this hampers accuracy of the risk management analysis and other marketing strategies. In fact, risk value is mainly measured by multiplying probability of adverse event with associated cost (Li et al. 2022). In this manner, they can prioritize further management decisions and allocate resources, since participant 14 commented that, “....Organizationally, integrating BDA into our existing marketing systems took time and effort. Technologically, ensuring our data sources were reliable and that our analytics tools were up to the task was a significant hurdle....”

For the purpose of evaluate trading strategies, they ensure that all information is current and accurate. With the help of BDA, they can compile understandable amounts of datasets, which leads to decision-making in better way. At the same time, improving operational efficiency is another paramount factor in the present competitive business world (Bharadiya, 2023). This is not simply a luxury, rather a requirement for the organizations to thrive and prosper. In particular, they can adopt various security strategies to execute this. The significance of operational efficiency of companies lies in company’s potential to gain substantial benefits from market. Managers have claimed that, they can continue business operation through cost savings. Managers have also mentioned that, analyzing historical data is vital for them to pinpoint many inefficiencies. In this industry, analyzing production, marketing, trading and consumer data can reveal downtime patterns (Mangla et al. 2021). Hence, with BDA, they can increase customer satisfaction.

Theme 2: Operational Efficiency and Financial Performance

Data analytics empowers data-driven decision-making for the companies, which is a pivotal aspect in operational efficiency in market. In interview, the participants have mentioned that they collect and analyse data to gain insights and inform strategic decisions (Saleem et al. 2021). From their responses, it can be found that financial industry takes account of explosion of information or data and subsequently, application of BDA has become progressively important to drive informed decisions. They also can reduce risks and improve operational efficiency through this. In the Forex companies, they derive insights from Big Data, through which they can identify opportunities and thereby anticipate various potential outcomes (Shabbir and Gardezi, 2020).

Theme 3: Customer Focus and Satisfaction

Customer satisfaction is the building block of any firm belonging to almost every industry. From the interview with Forex companies’ employees, this is evident, as they want to satisfy their customers (Saleem et al. 2021). Reason behind this is, big data offers firms behind-the-scenes viewpoint about their customers along with their respective needs. Furthermore, they mentioned that they can offer fantastic insight about business processes and the manner, in which employees work. Different teams of these companies have already leverage big data appropriately. This also use this to deliver meaningful experiences to target customers. This simultaneously enhances staff performance (Li et al. 2022). Hence, this is valuable for improving customer satisfaction. Participant 10 gave an example of this, “....Ten years ago, these barriers were less complex, but now they’re more pronounced in the UAE market....”

Most of the participants have claimed that big data is important for them to identify unnecessary expenses. Through this, they can figure out things in more efficient and effective manner. This results in cost reduction. When the managers can see a big picture of the market, they can predict future trend (Ranjan and Foropon, 2021). Data about products and services is valuable to the managers, as per their comment, as this is significant to understand gap in service. Through this, they can create more meaningful service or product-related ideas to extend their businesses.

4.2.4 Research Objective 4: To identify the challenges UAE Forex companies, encounter in making effective decisions based on BDA insights.

Challenges in Decision Making After Adoption Of BDA

Table 4.13 Themes and codes for – Challenges in Decision Making After Adoption of BDA

Theme	Codes
Theme 1: Challenges in Deriving Actionable Insights from BDA	Interpreting BDA Results, Deriving actionable insights
Theme 2: Data-Related Challenges	Volume of data
Theme 3: The Dynamic Nature of the Forex Market	Dynamic Forex Market

Source: MaxQDA Output

Table 4.14 Codes and corresponding frequencies for – Challenges in Decision Making After Adoption of BDA

Code	Frequency
Dynamic Forex Market	9
Interpreting BDA Results	18
Volume of data	5
Deriving actionable insights	14

Deriving actionable insights	14
Volume of data	5
Interpreting BDA Results	18
Dynamic Forex Market	9
TOTAL	46

Source : MaxQDA Output

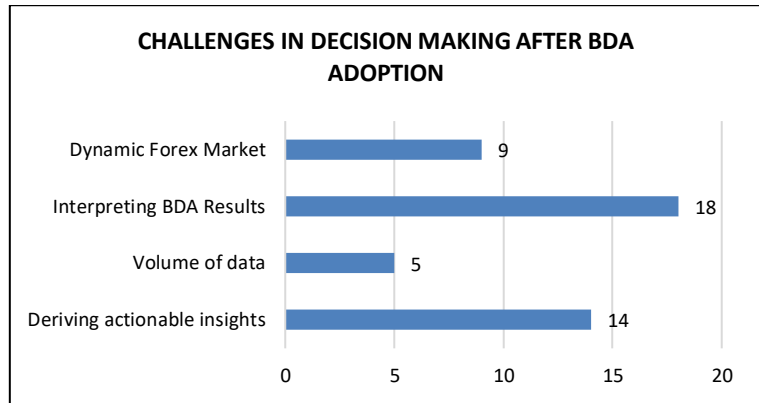


Figure 4.6 Graph showing Frequencies for – Benefits of BDA

Source : MS Excel Output

Theme 1: Challenges in Deriving Actionable Insights from BDA

The journey of Forex companies to use big data does not work without challenges, which is evident from the responses of managers. Maximum employees face issues with security and privacy concerns, since firms navigate influx of data. They also face difficulties in getting accessibility of business data, as they cannot maintain data quality (Dai et al. 2020). This is a critical task to select right platforms and tools. After this, big data is needed to make accessible to the users, who have varied levels of skillsets (Raut et al. 2021). On the other hand, participant 4 mentioned that, “....There were also organizational challenges in getting everyone up to speed and people resistance to change....”

In this context, careful maintenance of overall data quality is highly imperative to get meaningful insights. In some cases, the companies cannot maintain a balanced work between security and innovation (Nilashi et al. 2023). Due to this matter, companies must navigate technology innovation. By using this, they can identify the best-suited solutions. These align with specific needs of customers and accommodate future changes. Although the potential of BDA does not come without obstacles, with the help of strategic planning, firms can harness the power of analytics for transformative outcomes (Franco and De-La-Hoz-Valdiris, 2022). Interpreting BDA results is another hurdle mentioned by one participant. As per his comment, theyface challenges in overcoming the initial resistance to organisational change. In some cases, employees become sceptical about value of data-driven decision-making process.

Theme 2: Data-Related Challenges

In context of the Forex companies of UAE, BDA comes up with various issues, as the managers struggle in keeping tech in place. In their organizations, they be often able to adjust to new processes, since this is tough and requires serious upskilling. As per the comment of managers, they are in trouble to identify and act upon the complex events and patterns within data streams in actual-time, as this is intricate. It is the most complicated hurdles that BDA data sometimes does not match the real-time behaviour of market. Management also struggles to translate this into effective decisions, since they are habituated to older or straightforward methods. Due to this, participant 10 commented that, “.... When we started with BDA, the biggest hurdles were people adjusting to the

new tech, old organizational structures resisting change, and integrating the new tech into the existing systems. It is a matter of concern that the volume of data is really high. The IT team of Forex companies have skill-gap in integrating BDA with the existing systems (Sun et al. 2020). Reason behind this is, the process is quite complex and takes huge time.

Theme 3: The Dynamic Nature of the Forex Market

Ensuring seamless integration and compatibility of real-time systems with the existing databases and architectures is really challenging. The dynamic nature of Forex market is experienced by the interview participants (Zhu, 2020). Although it

is necessary to maintain compliance and security of the data, they cannot maintain data security and ensure compliance with strict regulations at the time of processing data. Moreover, this requires robust measurement. Due to lack of technology advancement, they cannot monitor and manage real-time processing systems (Munim et al. 2020). However, this is crucial to detect issues and thereby optimize organisational performance. Everyone in these organisations is not onboard, since participant 15 commented that, “....Organizationally, integrating BDA into our existing cybersecurity framework was tricky. Technologically, making sure our systems could handle the data load and still keep up with real-time threats was a big hurdle....”

Hence, maximum respondents have reflected the issues with people barriers. In organization context, integrating BDA process with current systems is really complex. There are also some technology-related issues. Due to this, they cannot ensure data accuracy and deal with hurdles (Munim et al. 2020). However, maintaining speed and consistency of data is mist for Forex trading. Another challenge is interpretation of the data properly.

Factors Influencing Misinterpretation of Data

Table 4.15 Themes and Codes for Factors Influencing Misinterpretation of Data

Theme	Codes
Theme 1: Knowledge and Skill Deficiencies	Lack of understanding, Lack of experience, Inadequate Training
Theme 2: Cognitive Biases and Misinterpretations	Bias, Misinterpreted the data
Theme 3: Contextual Oversights	Not considering the market nuances
Theme 4: Data-Driven Decision-Making Challenges	Focus only on raw data not understanding the context

Source : MaxQDA Output

Table 4.16 Codes and corresponding frequencies for – Factors Influencing Misinterpretation of Data

Code	Frequency
Lack of understanding	7
Lack of experience	3
Inadequate Training	2
Bias	3
Misinterpreted the data	25
Not considering the market nuances	4
Focus only on raw data not understanding the context	15
TOTAL	59

Source: MaxQDA Output

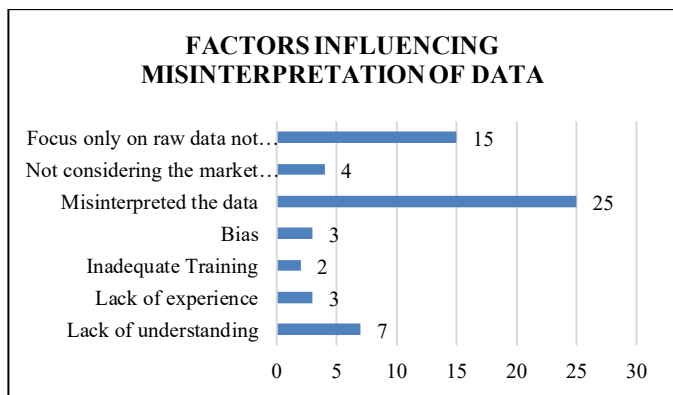


Figure 4.7 Graph showing Frequencies for Misinterpretation of Data

Source: MS Excel Output

Theme 1: Knowledge and Skill Deficiencies

The managers of Forex companies are highly concerned about the biggest challenges in implementation of BDA as the lack of efficient and skilled personnel. They have identified a serious shortage of competent employees in their organisations, who have necessary skills to work for big data (Abkenar et al. 2021). This is because, poor quality data analysed by them can distort the overall analysis and reduce benefits of the data-driven approaches. This is also expensive for the Forex companies. This is because, participant 12 said that, “....Sometimes it’s because the data was taken at face value without considering the bigger picture....” Lack of understanding of the team is a major issue in this context, as low-

performing team cannot handle information of original database and repair original source to resolve data inaccuracies. They also cannot use accurate methods to perform analytics and gain real-time insights. Apart from this, lack of experience can result in challenges with security management. Hassan et al. (2022) have noted that, online as well as physical threats can disrupt the database system. For example, this may cause data theft, ransomware, denial-of-service assaults or other malicious activities. Due to this, the managers have mentioned that, they leverage BDA to augment Forex trading (Talebkhah et al. 2021). To perform market analysis, they use BDA to identify patterns, anomalies and correlations of market data. However, inadequate training.

Theme 2: Cognitive Biases and Misinterpretations

In complex business strategy, this is difficult to know what tools to buy or where to focus your efforts without a strategy that includes specific milestones, problems and goals to be attained. Nevertheless, they mentioned that BDA cannot assist them to optimize trade execution timing and minimize transaction costs, without properly handling it. The same is commented by participant 15, “....However, these instances have helped us refine our data analysis processes and improve our understanding of the limitations of BDA....”

Unfortunately, validation of big data is a time-consuming process and respondents feel that validation is required to be performed manually. In addition to this, data might be outdated, low-quality or siloed (Chang, 2021). If the Forex companies will be actively harmful or inappropriate to the business. Although the organisations have business users (such as marketers, executives and sales teams) can produce actionable insights, respondents acknowledged that they have lack of data scientist and skilled IT professional. It is clear from the response of participant 8, as he said, “....We’ve made a few mistakes along the way, but they’ve been valuable lessons. Now, we’re more cautious and always double-check our findings....” Hence, this produces biased dataset and misinterpretation of the data.

Theme 3: Contextual Oversights

Forex companies can derive substantial advantages from BDA, though a substantial number of challenges to mitigate. This is evident from the interview of respondents. The most overarching issue is that huge volume of data and from numerous data sources. Most of the Forex businesses cannot handle such a large sized data (Ogbuke et al. 2022). The contextual oversight is that, knowledge management is difficult in organisations for data integration. Due to this, participant 20 told that, “.... BDA results were misread, mostly because folks were too focused on the numbers and not the context....worry about when we were relying more on experience and less on data....”

They intend to modernize systems to use data effectively, though this is not possible with outdated technologies and tools (Naeem et al. 2022). This fact is really a matter of concern, since analytics can be difficult to scale for the organizations of UAE. Collecting data and creating relevant reports becomes progressively complex. To handle this, managers need to emphasize value of company’s risk management system to different aspects of organization. If all the members of data analytics team understand benefits properly, they are likely to cooperate with their management. Implementing change is often difficult for these companies. Though using a centralized system of data analysis allows managers to communicate results easily and attain buy-in effectively from stakeholders.

Theme 4: Data-Driven Decision-Making Challenges

The managers of Forex companies in UAE have responded whether they encountered situations, in which BDA results were misinterpreted in Forex trading decisions. They have mentioned various factors that are responsible for this. Managers have claimed that they use BDA to do various tasks, such as market analysis, order execution and risk management (Fathi et al. 2022). In context of using BDA to address trends and patterns of market data, they need to assess risk factors underlying. Due to this, they cannot optimise trading strategies more perfectly. BDA is also helpful for executing trades efficiently. Without challenges in data-driven system, real-time data as well as analytics cannot be validated. The importance of this field is mentioned by participant 13, while he commented that, “....Yes, there have been instances where BDA results were misinterpreted, leading to suboptimal trading decisions....”

On the other hand, participant 16 is worried about misinterpretations of the data, while it is taken out of a particular context. This is because, the team does not have enough experience in to read the analytics. Due to this, a manager realised that BDA results are misunderstood, since they considered a bigger picture (Olaniyi et al. 2023). Hence, they need a solid understanding of market and analytics to avoid missteps.

4.2.5 Research Objective 5: To investigate whether UAE Forex companies leverage BDA to gain insights into their customers’ behaviour in the Forex trading.

Table 4.17 Themes and Codes – Leveraging BDA to Understand Customer Trading Patterns

Theme	Codes
Theme 1: Customer Profiling and Segmentation	Identify customer segments/behaviour, Currency combinations, Risk Tolerance of customers, Customer issues while trading
Theme 2: Operational Efficiency and Risk Management	Budgeting, Identify Fraudulent Activities / Compromised Accounts, Take Security Measures
Theme 3: Marketing and Customer Experience	Marketing Campaigns, Provide better services, Tailor Financial Products
Theme 4: Data-Driven Insights and Predictions	Identify Peak Trading times

Source : MaxQDA Output

Table 4.18 Codes and corresponding frequencies for – Leveraging BDA to Understand Customer Trading Patterns

Code	Frequency
Identify customer segments/ behaviour	6
Currency combinations	3
Risk Tolerance of customers	1
Budgeting	2
Customer issues while trading	1
Marketing Campaigns	1
Identify Fraudulent Activities / Compromised Accounts	2
Take Security Measures	3
Provide better services	14
Identify Peak Trading times	3
Tailor Financial Products	5
TOTAL	41

Source : MaxQDA Output

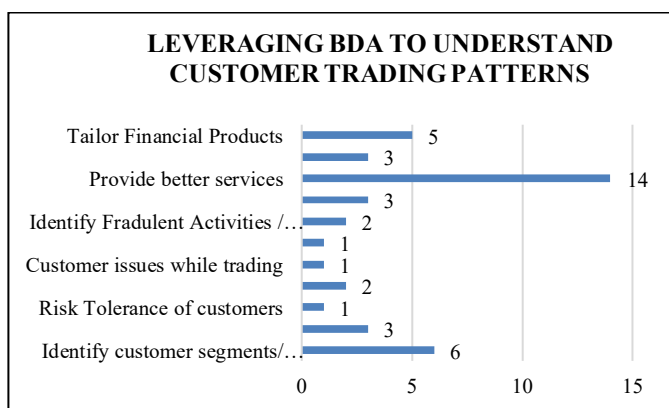


Figure 4.8 Graph showing Frequencies for – Leveraging BDA to Understand Customer Trading Patterns

Source : MS Excel Output

Theme 1: Customer Profiling and Segmentation

To answer this interview question, respondents gave various examples of how they use BDA in their respective Forex companies to gain actionable insights. Most of the managers have realised that BDA is fruitful for them to identify distinct customer segments having diverse risk appetites or trading styles. Through this, they can tailor products or services to satisfy their specific needs (Yoseph et al. 2020). Identifying the patterns underlying in customer segments or behaviour is an additional feature of this. Furthermore, they indicated several issues with this, such as currency combinations, the ability of risk tolerance of the customers and the difficulties faced by customer while trading. As per the comment of participant 12,

“....We’ve used BDA to really dig into how our customers trade—things like

which currency pairs they favor or when they’re most active....”

They mainly utilise this information to customize their services to meet customers’ needs. They perform it through offering personalized recommendations and optimizing the trading times. On the other hand, participant 6 has directly said that they adhere to these analytics to identify segments of target customers, which have diverse risk appetites or trading styles. This practice is really valuable for them to tailor products and other financial services to satisfy specific needs. However, some of them, who have not used BDA directly in their organisations for this purpose, definitely want to see how this can be a meaningful tool. In fact, analysing customer data is crucial for these firms to identify trends and customise offerings to meet specific needs. Hence, the main focus remains on offering them a better experience (Katragadda, 2022).

Theme 2: Operational Efficiency and Risk Management

Participants in this interview have mentioned how the UAE-based Forex companies apply BDA to understand customers’ behaviour in context of trading. To respond, they have revealed that they use BDA to track trading behaviours along with preferences of the customers. Present technology aid is also fruitful for them to customise financial strategies and products to better satisfy their needs. Similar to this, Participant 2 opined that management uses this to spot patterns exist in customer behaviours. According to this, they take security measures to protect trading activities. It is clear from the observation of participant 9,

“....used BDA to understand customer needs and tailor our product line crucial for staying ahead in the fast-moving Forex market....”

Many managers have claimed that they use BDA to spot the trends of customer behaviour, such as the type of services they prefer and the areas that are mostly active. Present strategy is helpful for the Forex companies to tailor their budget and improve offerings. Another example given by the participant 23, which is that, they use BDA to recognise common issues faced by the customers during trading. By identifying this, they can be proactive to solve these problems (Alkhayrat et al. 2020). If any customer has certain queries, they can utilise relevant resources and adjust supportive approach accordingly. Hence, this is a collaborative process.

Theme 3: Marketing and Customer Experience

Managers of Forex companies in UAE are highly cognizant to the matter that the application of BDA can be augmented to determine times of peak trading and profitable currency pairs among clients. In particular, this is a great insight to empower the managers to tailor their services as well as marketing strategies. By following this strategy, they enhance customer engagement and their satisfaction (Thakkar et al. 2022). This is clear from the comment of participant 16,

“....BDA has helped us identify customer preferences and trading patterns, allowing us to personalize our marketing campaigns and improve engagement....”

Based on this, they also design elements of marketing campaigns. Through better implementation, the managers use BDA to evaluate customer behaviour, in terms of popular trading services. According to this, the companies can find which marketing messages are most effective. This application enabled them us to tailor service offerings and marketing campaigns. Hence, this is important to generate higher engagement rates (Perumalsamy et al. 2022). For them, tailoring financial products also become easier. The comment of participant 19 has strengthen this opinion, as

“....We’ve used BDA to track how users interact with our products, which features they like, and where they drop off....”

For improving this process, participant 11 have disclosed that, instrumental to evaluate trading behaviours of clients, which allowed them to identify patterns and preferences. As per the evaluation of these analytics, they can determine optimized trading times and offer personalized recommendations. In other words, Forex managers make use of quantitative analysis, since financial anticipation is serves as a strategic advantage for them. After predicting market trends, they can forecast financial outcomes, which helps them to align trading approaches with market movements. In this manner, BDA guides organisational decision-makers to overcome economic uncertainties.

Theme 4: Data-Driven Insights and Predictions

According to the respondents, BDA is instrumental to offer a personalized and more customer-centric experience, which ultimately enhances customer loyalty. They have made significant progress in incorporating BDA in their business operations. They can spot patterns underlying in customer behaviours (Ikegwu et al. 2022). This strategy is helpful to take necessary security measures and better protect trading activities of customers.

In contrast, participant 13 said that, “....By analysing customer data, we can identify trends in trading behaviour, understand customer needs, and tailor our products and services accordingly....”

In order to identify peak trading times, they constantly track customer trading attitudes and their preferences. By getting valuable understanding from this, they make adjustment into financial products or strategies (Mehra, 2023). Several managers (such as participant 7 and 8) discussed that, they have not directly used BDA, though they know that it is a powerful tool. They realised that analysing

customer data through BDA is crucial to identify trends and modify offerings. This helps them to satisfy their specific needs. However, participant 20 is worried about security of trading, as he stated, “...unusual trading patterns that could indicate fraudulent activity or compromised accounts.... tighten security and protect our customers more effectively....”

In addition to this, participant 15 has explained his experience and mentioned that they case, use BDA to comprehend critical user behaviour from the perspective of financial security. For example, they can identify uncommon login patterns, requests for data access or others. This respondent is seen to be aware of compromised account through trading activities. By gaining deep insights, they can tighten security and shield customers from possible cyber threats. Another manager (participant 17) wants to see what clients like or do not like. Reference to this, they can improve financial services. Participant 14 has also gained many benefits from this. The respondent experienced popularity of trading services in the modern age and subsequently, they try to develop marketing messages to resonate best. Subject to this, they tailor product offerings and marketing campaigns that satisfy customer needs. This will lead to effective marketing and better engagement rates.

Research Objective 6

To explore UAE Forex companies' perspectives on the potential impact of BDA on customer satisfaction and revenue generation.

Customer Satisfaction After BDA Implementation

Table 4.19 Themes and codes for – Companies’ Perspective on Customer Satisfaction After BDA Implementation

Theme	Codes
Theme 1: Enhanced Customer Experience	Personalized Services, Enhanced Trading Experience, Faster Service, Feeling of security, Improved Customer Satisfaction, Increased Loyalty, Identify customer segments/behaviour
Theme 2: Improved Financial Outcomes	More value, Accurate Trading Advice, Better Financial Advice given, Reduced errors

Source : MaxQDA Output

Table 4.20 Codes and corresponding frequencies for – Companies’ Perspective on Customer Satisfaction After BDA Implementation

Code	Frequency
Personalised Services	17
Enhanced Trading Experience	3
More value	1
Faster Service	6
Feeling of security	4
Accurate Trading Advice	6
Increased Loyalty	4
Improved Customer Satisfaction	21
Better Financial Advice given	1
Reduced errors	1
Identify customer segments/behaviour	6
TOTAL	70

Source: MaxQDA Output

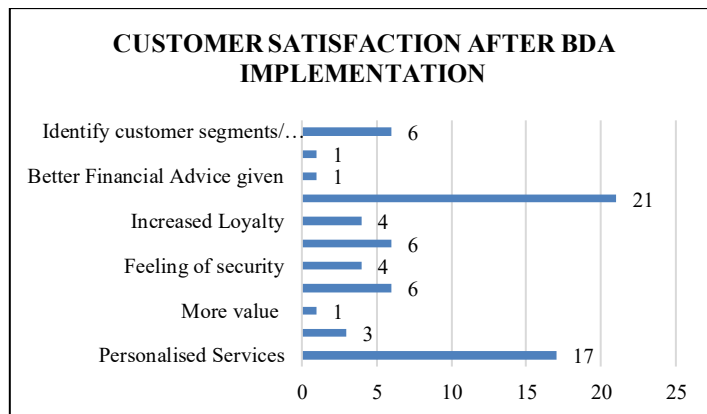


Figure 4.9 Graph showing Companies’ Perspective on Customer Satisfaction After BDA Implementation

Source: MS Excel Output

Theme 1: Enhanced Customer Experience

The managers of Forex companies shared their observation of any changes in context of customer satisfaction with Forex trading services. As per their viewpoint, implementation of BDA comes up with various benefits and customer satisfaction level has improved definitely. Clients of these firms have appreciated trading advices accurately. This helped them to offer faster and most streamlined services to the customers (Mariani and Wamba, 2020). Some of the organisations have successfully used BDA and they realised immediate effects. Managers noticed that their customers feel secure for getting personalized services, which leads to higher level of customer satisfaction with trading services. As per the comment of participant 11, “...Customers appreciate the enhanced trading experience, characterized by more accurate predictions, faster execution times, and personalized services....”

Offering enhanced trading experience is the direct effect of using BDA in Forex companies. They felt that companies’ products are more aligned with customers’ expectation. However, this process was not such with the use of older methods (Maroufkhani et al. 2020). One manager shared his experience that, after implementing BDA, the company has realised a noticeable improvement of customer satisfaction rate. Clients in market really appreciate faster and accurate service along with personalized insights provided by the companies.

Theme 2: Improved Financial Outcomes

From the responses, it is clear that, managers are thankful to BDA, since it enabled them to create relevant and more personalized marketing campaigns. Through this, they can get more improved customer loyalty (Hamilton and Sodeman, 2020). Clients in trading market also appreciate this custom-made approach and they feel that their services are allied to their needs. This, in turn, has translated to higher satisfaction level. Managers have mentioned that they obtained deep insights into current market trends, risk potential and customer behaviour, since big data has enabled the firms to make predictions in better ways (Hasan et al. 2020). They can now predict future financial performance through analysing past performance of the trends as well as customer preferences. To support this, the comment of Participant 15 can be considered, “...When clients know their assets are secure, they’re more likely to stick around and even recommend us to others....”

The clients get more value to their services, since they get accurate trading advice from these companies. Most of the managers have given affirmative answer to this question. It is clear that they experienced significant increase of customer satisfaction. As they provide more personalized and better financial advice, customers started to believe in the trading services (Hasan et al. 2020). In other words, with the help of BDA, they can allocate resources to different areas, which reduces errors and improves customer satisfaction. It is also obvious that customers certainly feel safer, as they get to know that the company is using advanced tools to protect data. Through this, managers experience a boost in customer satisfaction, since they trust a lot with sensitive information.

Increase in Revenue

Table 4.21 Themes and codes for - Companies’ Perspective on Increase in Revenue After BDA Implementation

Theme	Codes
Theme 1: Financial Performance and Profitability	Increased revenue, Increased profitability, Reduced losses

Theme 2: Operational Efficiency and Risk Management	Better budgeting, Reduced Financial Risks
Theme 3: Market Expansion and Opportunities	More business, New Market opportunities
Theme 4: Improved Decision-Making and Strategies	Product line Management, Reduced errors, Helped optimise trading strategies
Theme 5: Enhanced Customer Experience	Customer satisfaction

Source: MaxQDA Output

Table 4.22 Codes and corresponding frequencies for – Companies’ Perspective on Increase in Revenue After BDA Implementation

Code	Frequency
Increased revenue	19
Better budgeting	2
More business	3
New Market opportunities	1
Increased Profitability	3
Customers satisfaction	12
Reduced Financial Risks	6
Product line Management	3
Reduced errors	2
Helped optimise trading strategies	10
Reduced losses	1
TOTAL	62

Source: MaxQDA Output

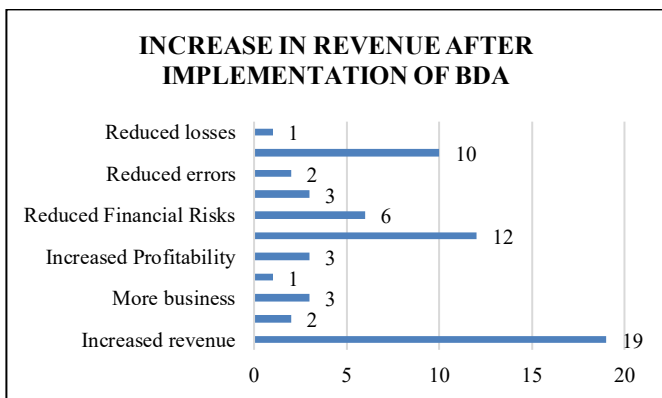


Figure 4.10 Graph showing Frequencies for – Companies’ Perspective on Increase in Revenue After BDA Implementation

Source: MS Excel Output

Theme 1: Financial Performance and Profitability

The managers of UAE-based Forex companies have shared their observation about measurable increase of revenue after implementing BDA in Forex trading activities. From the responses of Forex companies’ managers, it can be found that they realised a substantial increase of revenue, since the time they have used BDA in their trading process (Kumar et al. 2022). According to them, this helped the managers to optimize various trading strategies therefore drive profitability. Another manager added that he implemented BDA in the organisation with the purpose of boosting revenue. This organisation was previously suffering from losses due to security breaches (Maroufkhani et al. 2020). While the firm used BDA to execute trading overall trading efficiency has been enhanced. From the comment of participant 11, “...The improved accuracy in trading decisions, better risk management, and optimized trading strategies have directly contributed to higher profits....”

Due to this, increased revenue and increased profitability both are the significant benefits of BDA application. In fact, one manager was definite that he felt

revenue increase since implementing BDA. It has brought a precision to trading decisions, which resulted in better outcomes (Okafor et al. 2021). Escalated customer satisfaction is also a great advantage for the organisation. This is a win-win situation, as better performance on management’s end and engaged and happier clients. In Forex trading activities, reduced losses are attractive for most of the clients (Del Giudice et al. 2021). In this regard, the managers optimize trading strategies, reduce risks and provides a personalized client experience. In this manner, the managers retail larger customer base.

Theme 2: Operational Efficiency and Risk Management

Interviewees have experienced a visible increase of revenue, by applying more targeted and more effective marketing strategies. They noted that they have been able to focus on customer segments properly and craft campaigns that actually resonate. By following this approach, managers can drive conversions and produce more business (Ichsan et al. 2021). Hence, from this perspective, BDA has a vital role in success. This is evident from the statement of participant 18, “...Yes, we’ve seen a bump in revenue, partly because we’re spending smarter and getting more out of our budget....”

On the other hand, another manager thinks that it is hard to measure a direct connection between implementation of BDA and boosting revenue. However, undoubtedly improved security is crucial for them to retain client base and avoid expensive breaches. This indirectly improves bottom line. For better budgeting, managers of high-frequency trading businesses use BDA to perform trades at minimal latency (Kushwaha et al. 2021). Accuracy and speed of trade execution make momentous differences in financial profitability. Through this, they can understand market sentiment and help traders to anticipate movements in price, which leads to reduced financial risks.

Theme 3: Market Expansion and Opportunities

From interview, it can be found that managers of Forex companies feel that the business is tricky to connect BDA directly to revenue generation. Under this circumstance, they need better security to help to retain customers and eliminate breaches, as these can be costly. It is a matter of mental satisfaction for them that, their data is protected and safe. This gives them the confidence to positively impact on the bottom line (Deepa et al. 2022). In this manner, they can generate more businesses. It is true, since participant 21 told that, “...While it’s tough to link directly, the improved customer engagement from BDA has definitely played a part in boosting our revenue. ...”

On the other hand, some of the managers have opined that it is not even possible for them to directly measure the connection. Though, there is a link between enhanced level of satisfaction of customers and retention (Chang et al. 2020). Ultimately, this contributes to gaining new market opportunities and increased revenue, because, happy customers are more likely to retain and trade more.

Theme 4: Improved Decision-Making and Strategies

Safety and risk management are paramount for trading organisations and big data offers valuable mechanisms for assessing and managing risks efficiently. By evaluating historical market data, correlations and volatility patterns, traders develop effective risk model, which is obvious from the opinions of participants. They use these in product line management, since these models alert them to arising the potential risks (Mikalef and Krogstie, 2020). They also allow proactive risk mitigation approaches, which helps to reduce errors and optimise trading strategies. The data sources available in these organisations offer historical and real-time market data, along with pricing, news sentiment and other fundamentals. By offering this information to the traders, the organisations make them updated and so that they can take well-informed decisions (Shamim et al. 2020). Hence, this boosts safety in trading activities. As per the statement of participant 19, “...By using BDA to optimize our products and target the right customer segments, we’ve been able to drive more sales and boost our bottom line....”

In this fast-paced Forex market, real-time data is irreplaceable. Big data allows monitoring of the overall market conditions in real-time. This includes sentiment changes and other related news events. Managers of these organisations provides instantaneous data feed, which ensures traders to get up-to-the-second information just a click away (Okafor et al. 2021). Recently, more customers are executing numerous high-frequency trades and they remain watchful on market developments. Due to this, real-time data through BDA is an essential asset for revenue growth.

Theme 5: Enhanced Customer Experience

Maximum interviewees have accepted that BDA has helped them to attract more revenue, as they experience better budgeting and extremely less financial slip-ups. These make real difference in terms of organisational success. One manager has mentioned that he relies on improving budgeting process and reducing financial uncertainties. Both the valuable to realise a remarkable uptick in company’s earnings (Ichsan et al. 2021). In fact, they are satisfied with the application of data analytics techniques, which stimulated growth of algorithm trading. Through BDA,

Strategies to Address Bias

- a. Participants were interviewed, the transcripts were shown to them, verified and validated by them.
- b. Detailed records of the research process were maintained.
- c. Data was collected from multiple sources to enhance credibility.

By acknowledging and addressing these potential biases, the researcher aimed to ensure the trustworthiness of the findings and to provide a rigorous and authentic representation of the participants' experiences.

5. Recommendations & Conclusions

Conclusions

The research about cloud-based BDA shows that the technology assistant has gained huge popularity in providing customer-insight driven business decisions and implementing design innovations. It can be concluded that, these foster most of the financial service-based businesses to adopt BDA in their business process. In particular, financial institutions incorporate BDA to understand social and environmental impacts of their investment decisions, as they can track real-time money movement through this technology. On the other hand, data quality used in analytics is also a matter of concern and it is a major challenge in financial service sector. It can also be found that risk of data inconsistency, deficiency of proper training and governance infrastructure pose challenges in this process to adopt technological convergence. It is evident that UAE-based Forex companies deal with many data-related issues, since the volume and nature of data is constantly changing. Henceforth, they support the forex trading through integrating advanced AI-technologies. In this context, inclusion of BDA within business process can support the FSCs to gain greater insights about market data, trends and other predictions. Through analysing this, they can gain a competitive advantage by assessing vast amount of dataset and identifying market patterns.

Present findings also highlighted the result of Deloitte survey of using data analytics in context of banking and financial services. Therefore, application of BDA is important in this context, due to increasing risks related to data migration, third-party fraud and abuse risk in supply chain network. On a contrary note, inclusion of new system or technology innovation can disrupt internal balance of the organization, which also leads to organizational inertia. Due to this matter, incorporation of BDA in business process cause difficulties for employees, as they might resist to accept changes in culture and upgrade skills or capabilities to adopt this level of technology advancement. Findings also investigated the influence of BDA to guide FSCs to design operational, strategic as well as tactical planning, as they have real-time data in hand for effective decision-making. Due to this matter, FSCs can manage underlying business risks and ensure improved management of their financial assets. Hence, in Forex trading companies, implementation of BDA plays an important role in improving customer service and satisfaction. Leveraging operational efficiency is thereby a significant decision to make informed decisions regarding current market trends and consumers' preferences.

Primary qualitative data analysis has been a useful component in this research. Application of BDA in context of Forex trading is significant to evaluate data regarding stock market to predict the market trends and thereby make better investment decisions. As a consequence, managers assess historical stock market-related data for Forex trading to promote trading businesses. In this context, they apply mathematical algorithms and data-driven technology. By applying these aids, they can gain valuable insights into market patterns and make decisions to generate consistent returns. From managerial perspective, this is also an extremely valuable tool that avails multiple opportunities for the financial institutions. They can track and keep record of every transaction and predict trends to generate revenue. Though, application of present data-driven assistance requires utmost focus on employees' skills and knowledge, so that they can assess customer data. It is clear that automation of data analysis through BDA needs comprehensive dataset analysis. Hence, it is necessary to enhance degree of employee engagement throughout the process.

From organisational perspective, BDA offers better customer insights through assessing a vast amount of data, analysing consumer experience and predicting consumer behaviour. Due to this matter, organisations have digitalised financial products and services by integrating BDA into their business operations. This encourages a perceived usefulness of receiving better customer insights. As a consequence, managers can tailor financial products and other trading services appropriate for diverse consumer groups. Hence, use of data-driven technology to predict consumer behaviour is valuable for improving consumer interaction with the Forex trading company. This aids them to meet the desired level of customer satisfaction and secure long-term growth. However, cultivating an innovation culture of governance inspires Forex organisations to apply various financial metrics to measure organisational success. As Forex companies adopt

BDA, this helps to optimise their operational process. In this regard, managers also put effort to improve their resource allocation and overall control process. Likewise, encouraging innovation governance in management body offers deeper insights into market conditions and related consumer behaviour. This, in turn, promote embracing data-driven technology and maximise profitability.

Data-driven technology assistance offered by BDA helps to provide valuable understandings into preferences and behaviour of customers about financial products. Following operational activities of the Forex Companies, BDA gathers and analyses huge volume of consumer data. Based on that, they can trace affinity patterns and forecast consumer behaviour. Subsequently, BDA can avail plenty of opportunities to improve customer experience in Forex trading while generating better customer satisfaction. In a similar way, BDA adoption for Forex trading is vital to identify the most profitable areas to trade or to invest. Reference to this, managers use historical stock market data. Primary qualitative analysis also reveals that organisations need to manage risks in Forex trading by using predictive analytics method for stock market forecasting. They can also assess credit risks, which is an important step for investment marketing. In other words, financial metrics and stock market data stimulates designing approaches of both financial product and services. As well, market trend detection and careful consumer behaviour analysis through using data-driven technology generates many scopes for FSCs. According to this, they can optimise strategies and provide customised financial products to different customer segments.

The competition in global financial market has been progressing, which promotes financial institutions to implement data-driven technologies for gaining better market perceptions. These include minutiae of market trends, consumers' trading behaviour, their consumption patterns and possible risk factors in future. However, it is true that evaluation of such a huge volume of data to foresee market risks and consumer behaviour offers competitive edge to the Forex companies. At the same time, data-driven culture integrates knowledge acquisition process for the workforce. By gaining this knowledge, they can gather meaningful data and develop vital insights about customer demands and trends. Hence, it has been provided that strategic use of BDA facilitates dynamic innovation capabilities in organisations. This is why management integrates ML, predictive analytics and human knowledge in business process.

In this regard, BDA serves as a sophisticated technology, designed for the trading and financial service businesses to improve their competitive landscape (Al-Dmour et al. 2023). Apart from this, companies' managers leverage BDA to track the real-time data, predict changes and gather customer details at substantial amount (Mashuri et al. 2022). Apart from this, the implications of BDA in supporting Forex companies are fostered by the data-driven technology exists in the organisations. Management gathers and utilises real-time data to make strategic decisions, which are crucial for instrumenting business strategies. In this manner, they gain optimum profitability and maximise productivity. Due to faster decision-making ability, this technology advancement secures holistic business growth. Various Forex companies of UAE have already experienced the power of data-driven technology, though it poses significant issue for several firms (Al-Khatib, 2022). This research has explored potential risks related to data accuracy, cost of BDA implementation, prerequisite for adequate infrastructure along with other requirements. By thriving this level of adequacy, companies can influence the level of productivity as well as decision-making process in businesses. This, in turn, improves financial profitability and thereby secures customer loyalty (Bertello et al. 2021). From this, it is evident that exploring the benefits and challenges related to BDA adoption in Forex companies is the core concern of organisations (Arjun et al. 2021). In qualitative research, risk proactiveness of the data-driven organizations have also been explored. Improved data analytics leveraged by company's managers is vital to achieve maximum profitability. This is why they leverage information about employee skills and capabilities to build better workplace by integrating the workforce with technology advancement.

Recommendations

Recommendation 1

Organisations should understand the risk through using predictive analytics-based risk scoring algorithms (objective 1 and 2)

Forex companies should use predictive analytics to improve their risk management process. They can assess long-term ROI targets and risk associated with every trade by only running complex and analytics-driven calculations. Main aim of trading firms is to make maximum profits compared to losses in long-run. Due to this, it is crucial that they understand underlying risks of a trade beforehand committing it (Javaid, 2024). In order to implement this, it is necessary for the managers to be educated enough to understand the terminology, figures along with their possible outcomes. With this knowledge, they can grasp risk of a trade. Use of appropriate financial instruments in trading also makes a real difference. Contract for difference or CFD has gained huge perceived familiarity. Though, CFD-based trading activities are extremely complicated unlike spread trading (Pattiyam, 2021). Management should therefore prepare various key inputs, such as historical data,

data preprocessing, feature engineering, algorithm selection and model training data. According to this, some evaluation metrics are used, as follows.

Financial viability: It is necessary to scrutinise effectiveness of trading algorithm to generate favourable outcomes throughout a designated period. Hence, managers should examine algorithm's ROI to comprehend quantitative measure of trading returns related to initial investment (Kim et al. 2020). This will be beneficial to realize the benefits of BDA in UAE Forex companies.

Sharpe ratio: This is calculated to understand the excess return for every unit of risk, by factoring into and standard deviation. By using this ratio, management can gain insights into algorithm's performance, supporting in decision-making process about risk and associated returns (Kim et al. 2020). This quantity of algorithm's efficiency to convert risk into substantial returns, which facilitates optimal strategy selection.

Winning percentage: Management uses this crucial metric, to directly measure accuracy of the algorithm in generating profits. With the help of this metric, traders can gain valuable understandings in decision-making (Pattyam, 2021). They can use measurable benchmark to evaluate success of the algorithm in executing profitable trades. Hence, this will help to mitigate the challenges faced by UAE Forex companies face implementation of BDA in organisations.

Maximum drawdown: This represents the largest decline of algorithm's equity curve. With the help of this tool, management can measure stability, with lower drawdown that indicates increased resilience to fluctuations of market (Bello, 2023). In order to find maintain a balance between risk and trade return, this tool should be used.

Recommendation 2

The management of Forex companies should apply Machine Learning to investing or trading (objective 3 and 4)

Several essential stages are involved in this process, which should be followed by management.

Collecting data: It is necessary to collect historical data to apply ML to trading, which is the foundation for training, testing and validating the trading models. Price data includes open, close, high and low prices of financial instruments throughout a certain time period. This is fundamental to analyse market trends and make predictions (Dixon et al. 2020). Moreover, trading volumes, financial statements, economic indicators (interest rates, inflation rates, GDP growth and unemployment rates) and news sentiment (from analyst reports, news articles and social media).

Cleaning data: At this stage, management remove inconsistencies from the collected data. This is because, price data must be reliably formatted in same currency across entire dataset. In addition to this, stock prices are adjusted for different events such as dividends and stock splits to reflect value changes (Sahu et al. 2023). After this, they should handle all missing values through performing imputation, removal and filter out noise stage. In this manner, UAE Forex companies can utilize BDA for decision-making in Forex trading activities.

Feature engineering: This is another crucial step in the pipeline of ML. Here, the management creates many new features from the raw data to capture underlying patterns, which will be suitable for the prediction task. It is necessary to well-execute feature engineering to enhance predictive power of ML models significantly, which would lead to improved performance. Several technical indicators should be used here, such as MA (Moving Averages), RSI (Relative Strength Index) and MACD (Moving Average Convergence Divergence). The time-based features include seasonality and day of the month (Ferreira et al. 2021).

Data normalization: This is the fourth step in ML, which involves various transforming features to ensure that they are at similar scale. To improve the performance and convergence of ML models, users should mitigate the influences of distributions and varying scales of different features. The importance of data normalization lies in improvement of model performance, enhanced interpretability, reduces bias and training facilities (Liu et al. 2020). Normalization should be done in different techniques, such as Min-Max Scaling, Z-Score Normalization and Log transformation. Through this, they can make effective decisions based on BDA insights.

Model selection: In this stage, it is necessary to select the right ML algorithms and align with a particular trading strategy and prediction task. There are different types of algorithms, which are suitable for different problems. Selection of model meaningfully impact performance of trading model. Regression tasks should be executed in one of the forms among Linear Regression, Random Forests and Neural Networks (Dixon et al. 2020). In order to predict market direction, classification tasks are crucial, which includes Logistic Regression (to predict growth or decline of stock value) and SVM or

“Support Vector Machines”.

Model training: After this, the selected model should be trained through Data Splitting, Regularization, Preventing Overfitting and Hyperparameter Tuning.

Back-testing: To understand future performance of the model based on the past model and identify potential weakness of the strategy, this step is vital. Hence, management should use historical datasets to simulate trades corresponding to the signals produced by the ML model (Liu et al. 2020). Based on this performance metric should be evaluated, such as Sharpe Ratio, Maximum Drawdown and so forth.

Live trading: In the final stage, users should deploy the tested and trained models in real-world trading scenario and monitor their performance continuously to ensure that they can adapt to varying market conditions (Dixon et al. 2020). This stage also involves real-time data processing and execution of trading.

Recommendation 3

Forex trading organisations must conduct consumer behaviour analysis through BDA (objective 5 and 6)

In trading market, it is necessary to understand ever-evolving consumer behaviour with the help of proper plan and sound methodologies through consumer behaviour analysis. This will help the users to reap meaningful insights to attract and retain potential customers. Management should follow the below-mentioned stages.

Segmentation: At the initial stage, it is necessary to utilize BDA solutions to segment target customers based on demographic, psychographic, geographic along with other channels they prefer for their recurring actions (Talwar et al. 2021). In this manner, they target right messages to right people and personalize marketing approach to augment consumer service. Due to this, UAE Forex companies leverage BDA to gain insights into customers' behaviour in the Forex trading.

Identify key benefit of every segment: After segmentation stage, management should assess consumer's needs and address key benefit, which results in choosing the organisation in future. Moreover, they should examine several critical factors, which influence them to make buying decision (Kalda et al. 2021). Based on this, management can determine USP that appeal to consumers. According to this, they can personalize financial products and position them.

Allocate relevant quantitative data to compare with qualitative data: In this stage, management should collect a huge amount of data to grasp precise insights. Regarding this matter, they must get support from various data analytics solutions, such as predictive analytics platforms and tools for data collection. Data can be in form of organic, social media and paid media insights (Loxton et al. 2020). There exist various secondary venues, such as consumer reviews, industry trends and competitor analysis. This analysis offers a clear picture of overall market and compare this with the qualitative data. By following this, they can identify the hotspot to focus on them.

Make changes in marketing campaigns: Based on consumer behaviour analysis, management needs to identify the relevant delivery channels and understand key opportunities, which need attention. For trading companies, this is crucial to tailor communication to satisfy customer needs effectively (Kalda et al. 2021). This has potential impact on customer satisfaction and revenue generation.

Analysis of results: Rather than being a one-time activity, this is a continuous process to evaluate and optimize the behavioural results by effectively monitoring campaign optimized (Talwar et al. 2021). BDA facilitates different types of analytical models, such as descriptive analysis, predictive analysis, prescriptive analysis, competitor analysis and Net Promoter Score.

Recommendation 4

It is vital to improve training and development facilities for organisational employees to upgrade their skillset (objective 7)

As Forex organizations become data-driven, skills related to data analysis also became indispensable for modern professionals. Management should provide training to every single job role holder, rather than only the data analytics. The training courses should include low- and no-code data analysis-based tools. The marketing department needs this training to optimize campaigns, the project managers to assess project progress, the sales teams to track engaged customers and the HR teams to gather insights into employee engagement (Park et al. 2020). In organisational context, training and skill development must include the following. With these recommendations, UAE Forex companies can consider adoption of BDA.

Develop technical proficiency: Being skilled in several programming languages, such as Python, SQL and R is crucial for data manipulation, querying databases and data analysis. R and Python are extensively used in data manipulation, machine

learning and statistical analysis, while SQL is essential for querying and database management (Yang et al. 2020). All the employees should be proficient in “data manipulation libraries” such as NumPy and pandas, through which they can handle and analyse data efficiently.

Offer hands-on experience: It is necessary for the management to provide opportunities to the employees to work on real-world projects and participate in various data challenges. They can also pursue internships, which can provide real-world exposure to the field of data analysis, data visualization and problem-solving (Rouf et al. 2021). Hands-on experience should be given to every department, so that employees can apply theoretical knowledge into practical scenarios. This will build confidence in respective skills and thereby develop a profound understanding of data analytics process.

Online Courses and Continuous Learning: Both of these are irreplaceable resources to advance employees’ Data Analytics skills. Management should provide opportunities to use online skill-development platforms, such as Coursera, edX and Udacity to receive Data Analytics courses, specialized programs and certifications. Engaging in continuous learning will be beneficial for the professionals to remain up-to-date with advancements and latest trends in Data Analytics and enhance expertise (Carta et al. 2021).

Collaboration and networking: In this crucial aspect of BDA, management should engage with other industry professionals, join communities of Data Analytics and participate in discussions and forums. This networking approach will promote knowledge sharing and their exposure to various perspectives. Furthermore, collaborating in data analysis projects with peers and other experts is important. This offers diverse opportunities to acquire new techniques, build supportive network and gain insights into data analysis approaches (Yang et al. 2020). Employees can participate in networking events, workshops, data-related conferences and seminars, as these can enable them to connect with recruiters, industry leaders and potential mentors.

Specialize on industry-specific skills: Data Analytics professionals in Forex organisations should learn use of data visualization (Carta et al. 2021). Skill development courses should focus on creating charts, interactive dashboards and graphs. Through this, stakeholders can grasp critical insights rapidly and foster data-driven decision-making effectively.

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