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School of Management and Business

Department of International Economic Relations, Business & Management

Bachelor's Qualification Work

Artificial intelligence technologies in business process management (based on "Advertising and production group NBS" case)

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Ph.D. in Economics

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Abstract

The purpose of this thesis is to investigate the use of artificial intelligence (AI) technologies in business process management (BPM), with a particular emphasis on a case study of the Advertising and Production Group NBS. The purpose of this study is to investigate how NBS incorporates artificial intelligence technologies in order to improve and update its business procedures, particularly in the dynamic industry of advertising and production. The report demonstrates the revolutionary implications that artificial intelligence has had on the operations of NBS, including better customization of advertising content, improved decision-making, and increased efficiency within the organization.

In the analysis, particular artificial intelligence technologies such as machine learning algorithms, natural language processing, and predictive analytics are examined in depth. The purpose of this analysis is to demonstrate the role that these technologies play in optimizing processes, improving customer targeting, and understanding market trends. The report also covers the difficulties that new business startups (NBS) face, such as issues regarding data protection, the requirement for experienced individuals, and the limitations of embedding artificial intelligence in legacy systems.

In addition, the thesis analyzes the more far-reaching consequences of artificial intelligence (AI) in business process management (BPM) within the advertising industry. It demonstrates how these technologies might result in competitive advantages and proper innovation. The report finishes with strategic recommendations for efficiently exploiting artificial intelligence in corporate operations. These recommendations emphasize the significance of continuous learning, ethical application of AI, and collaboration across functional areas.

Keywords: Artificial Intelligence, Business Process Management, Advertising and Production Group NBS, machine learning, predictive analytics.

Анотація

Метою цієї дипломної роботи є дослідження використання технологій штучного інтелекту (ШІ) в управлінні бізнес-процесами (BPM), з особливим акцентом на прикладі рекламно-виробничої групи NBS. Метою цього дослідження є вивчення того, як NBS використовує технології штучного інтелекту для вдосконалення та оновлення своїх бізнес-процесів, особливо в динамічній індустрії реклами та виробництва. Звіт демонструє революційний вплив штучного інтелекту на діяльність NBS, включаючи кращу кастомізацію рекламного контенту, вдосконалення процесу прийняття рішень та підвищення ефективності в організації.

В аналізі детально розглядаються окремі технології штучного інтелекту, такі як алгоритми машинного навчання, обробка природної мови та предиктивна аналітика. Мета цього аналізу - продемонструвати роль, яку ці технології відіграють в оптимізації процесів, покращенні клієнтського таргетингу та розумінні ринкових тенденцій. У звіті також висвітлюються труднощі, з якими стикаються нові бізнес-стартапи (НБС), такі як питання захисту даних, потреба в досвідчених фахівцях та обмеження впровадження штучного інтелекту в застарілі системи.

Крім того, в дисертації проаналізовано більш далекосяжні наслідки застосування штучного інтелекту (ШІ) в управлінні бізнес-процесами (BPM) в рекламній індустрії. Він демонструє, як ці технології можуть призвести до конкурентних переваг і стимулювати інновації. Звіт завершується стратегічними рекомендаціями щодо ефективного використання штучного інтелекту в корпоративних операціях. Ці рекомендації підкреслюють важливість безперервного навчання, етичного застосування штучного інтелекту та співпраці в різних функціональних сферах.

Ключові слова: Штучний інтелект, управління бізнес-процесами, рекламно-виробнича група NBS, машинне навчання, предиктивна аналітика.

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Faculty of Management and Business
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Educational level: **Bachelor degree**
Specialty **073 "Management"**
Educational program **"Management"**

APPROVED
Head of Department _____

Prof. Zharova L.V.
"10" May 2024

TASK
FOR BACHELOR'S QUALIFICATION WORK OF STUDENT

Ivanna Bolotova
(Name, Surname)

1. Topic of the bachelor's qualification work
Artificial intelligence technologies in business process management (based on "Advertising and production group NBS" case)

Supervisor of the bachelor's qualification work **Tetiana Gordiienko., Ph.D. in Economics, Associate Professor.**
(surname, name, degree, academic rank)

Which approved by Order of University from ***"25" September 2023*** № 25-09/2023-1к
2. Deadline for bachelor's qualification work submission "***25" April 2024.***
3. Data-out to the bachelor's qualification work This bachelor's qualification work, examines the historical evolution and current state of AI technologies, their implementation challenges, and their impact within the context of "Advertising and Production Group NBS." Through rigorous analysis, this study aims to uncover both the potential benefits and limitations of integrating AI technologies into business processes, offering a balanced perspective on their effectiveness and strategic implications.
4. Contents of the explanatory note (list of issues to be developed)
Research the historical perspective of artificial intelligence technologies. Explore the digital framework. Examine the current state of development of artificial intelligence technologies in business process management. Provide an overview of "Advertising and production group NBS". Analyze the company's performance indicators. Evaluate the effectiveness of artificial intelligence technologies implementation Suggest ways to improve the use of artificial intelligence technologies in "Advertising and production group NBS". Investigate the practical

implementation of artificial intelligence in the it industry. Recommend strategies for the it industry on working with artificial intelligence

5. List of graphic material (with exact indication of any mandatory drawings)
Annual Revenue of the Company. Net Profit of the Company. R&D Expenditure. Marketing Expenses. Gross Profit Margin, Net Profit Margin, Return on Investment. Customer Satisfaction, Retention Rate of Customers, Ratio of Inventory Turnover. Revenue Growth, AI Investment Allocation, Employee Training Hours.

6. Date of issue of the assignment

Time Schedule

№	The title of the parts of the qualification paper (work)	Deadlines	Notes
1.	I part of bachelor thesis	*10.12.2023*	In time
2.	II part of bachelor thesis	*27.02.2024*	Delayed
3.	Introduction, conclusions, summary	*25.04.2024*	Delayed
4.	Pre-defense of the thesis	*29.04.2024*	In time

Student _____
(signature)

Supervisor _____
(signature)

Conclusions (*general description of the work; participation in scientific conferences/ prepared scientific article; what grade does the student deserve*):

The study provides an investigation into Artificial Intelligence Technologies in Business Process Management, focusing on the case study of "Advertising and Production Group NBS." However, several notable shortcomings are evident. Subchapter 2.1 is overly general and lacks relevance to the topic, while Subchapters 3.1 and 3.2 are excessively theoretical, lacking depth and practical application. Delving deeper into trends of Artificial Intelligence Technologies development and future managerial strategies within the framework of AI technologies would enhance the paper's relevance and applicability to real-world scenarios. Additionally, the conclusions fail to effectively correlate with the preceding text, indicating a deficiency in synthesis and critical analysis. Considering these deficiencies, the work deserves an average grade.

Supervisor _____
(signature)

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INTRODUCTION

Artificial intelligence (AI) has emerged as a significant and important force in the field of business process management (BPM), bringing about a fundamental shift in the manner in which businesses operate and the techniques they use to optimize their processes. It is essential to have an effective administration of procedures in order to improve efficiency, reduce expenses, and achieve a competitive advantage in the present business environment, which is both dynamic and cutthroat. As a result of the extraordinary opportunities that artificial intelligence technologies present to optimize processes, automate jobs, and derive valuable insights from data, business process management (BPM) paradigms are being transformed.

The implementation of artificial intelligence (AI) technology into business process management (BPM) presents a substantial opportunity for businesses operating in a variety of industries, such as retail, banking, healthcare, and manufacturing, among others. Through the employment of tools and algorithms that are driven by artificial intelligence, businesses are able to instantly analyze vast amounts of data, identify patterns that occur repeatedly, and anticipate future trends with an unprecedented level of precision and efficiency. This gives businesses the opportunity to make decisions based on data, optimize the allocation of resources, and foresee the demands of customers, which eventually leads to greater operational efficiency and profitability.

In the field of business process management (BPM), artificial intelligence is making significant headway in the area of process automation, which is an essential domain. Some examples of intelligent automation solutions that are powered by artificial intelligence include robotic process automation (RPA), machine learning (ML), and natural language processing (NLP). These solutions are either replacing traditional manual operations or improving upon them. These technologies make it possible to automate procedures that are repetitive, streamline workflows, and improve process efficiency. As a result, human resources are able to direct their efforts toward activities that are more strategic and create more value.

Furthermore, the employment of predictive analytics that are powered by artificial intelligence is fundamentally revolutionizing the way in which businesses manage and improve their operations of their operations. Algorithms that are powered by artificial intelligence have the capacity to forecast future outcomes and tendencies by analyzing historical data and identifying patterns that are consistent with the data. Because of this, companies are able to actively identify potential roadblocks, lessen the likelihood of potential dangers, and enhance the distribution of resources.

Cognitive automation, which is a subfield of artificial intelligence that makes use of technologies such as machine learning (ML) and natural language processing (NLP), is making a contribution to the innovation that is occurring in business process management (BPM). By taking this method, the goal is to simulate human cognitive abilities such as learning, reasoning, and problem-solving. Cognitive automation systems have the capacity to comprehend material that is not organized, to decipher information that is complex, and to carry out tasks that previously required the involvement of humans. Through the implementation of this technology, businesses have the potential to streamline processes that are driven by knowledge, improve decision-making, and increase customer happiness, ultimately leading to the expansion of their business and increased competitiveness.

In addition, the deployment of AI-powered process mining enables businesses to obtain a profound understanding of the processes that are currently in place, identify areas of inefficiency, and improve workflows in order to attain the highest possible level of efficiency and effectiveness. Artificial intelligence algorithms are able to make use of event logs and transactional data in order to visually describe process flows, identify deviations from the standard, and recommend modifications in order to optimize operations and increase overall performance. By utilizing data in the management of processes, businesses are able to continuously assess and improve their processes in real time. This ensures that they are able to keep their flexibility and adaptability to changing market conditions.

The use of artificial intelligence technology into business process management has also demonstrated tangible benefits for businesses, including the reduction of costs,

the enhancement of productivity, and the expansion of revenue. According to research conducted by McKinsey & Company in 2020, businesses who have implemented AI-driven automation have experienced a significant reduction of 20-30% in expenses across all elements of their business operations. Artificial intelligence has the ability to streamline operations, eliminate errors caused by manual labor, and enhance resource utilization, all of which contribute to a significant potential for cost reduction.

To summarize, the application of artificial intelligence technology in business process management (BPM) is a tremendous opportunity for businesses that want to enhance their operational efficiency, encourage revenue expansion, and foster creativity. With the use of artificial intelligence-driven automation, predictive analytics, and cognitive automation, businesses have the ability to streamline workflows, improve decision-making, and create great customer experiences in the contemporary digital-centric economy. However, in order for businesses to fully utilize the possibilities of artificial intelligence in business process management (BPM), they need to address ethical concerns, talent difficulties, and other implementation obstacles. Additionally, they need to cultivate a culture of innovation and education in order to keep a competitive advantage in the market.

Relevance of Topic: AI technologies are becoming more and more integrated into company operations, and this presents a tremendous opportunity for efficiency, creativity, and competitive advantage. Businesses are using AI more and more to automate tasks and make data-driven decisions, so it's important to understand how this will affect business operations. In the current era of digital transformation, our research will provide important insights into the efficient implementation and scaling of AI technology in the production and advertising industry.

The Goal: The goal of the thesis is to analyze and propose strategies for optimizing the use of AI technologies in enhancing business process management within "Advertising and Production Group NBS," with an extension of these insights to the broader IT industry.

Tasks of the Work:

- research the historical perspective of artificial intelligence technologies

- explore the digital framework
- examine the current state of development of artificial intelligence technologies in business process management
- provide an overview of "Advertising and production group NBS"
- analyze the company's performance indicators
- evaluate the effectiveness of artificial intelligence technologies implementation
- suggest ways to improve the use of artificial intelligence technologies in "Advertising and production group NBS"
- investigate the practical implementation of artificial intelligence in the it industry
- recommend strategies for the it industry on working with artificial intelligence

Object of Research: The object of research is the integration and impact of Artificial Intelligence (AI) technologies in business process management, focusing on enhancing organizational efficiency, decision-making, and competitive advantage through a comprehensive analysis of existing literature, case studies, and industry reports.

Research Subject: The study aims to assess the effectiveness and revolutionary impacts of artificial intelligence (AI) technologies on the strategic and operational procedures of "Advertising and Production Group NBS."

The bachelor qualification wokk is made up of an introduction, three chapters, a conclusion and a list of references. The work is done on 74 sheets, with a total of 8 figures. The bibliography comprises 70 literature works.

CHAPTER 1
THEORETICAL FOUNDATIONS OF ARTIFICIAL INTELLIGENCE TECHNOLOGIES

1.1. Historical Perspective of Artificial intelligence technologies

Artificial intelligence (AI) technologies can be traced back to the middle of the 20th century, when pioneers such as Alan Turing and John McCarthy lay the framework for the development of intelligent machines. This is the historical perspective of AI technologies. The foundational work "Computing Machinery and Intelligence" written by Turing and published in 1950 presented the notion of the Turing Test, which proposed a criterion for judging whether or not a machine can demonstrate human-like intelligence

McCarthy is credited with coining the term "artificial intelligence" in 1956, during the Dartmouth Conference. At that time, he and other researchers proposed the concept of developing machines that might simulate human reasoning and problem-solving abilities. This marked the beginning of the revolution in artificial intelligence, which has since gone through rapid development as a result of advancements in processing power, algorithmic innovation, and the availability of data.

Symbolic or rule-based approaches were the primary focus of artificial intelligence research during the 1950s and 1960s. These approaches involved the development of computer programs that were supposed to replicate human intellect by manipulating symbols and logical rules. Early artificial intelligence systems, such as the Logic Theorist and the General Problem Solver, displayed capabilities in solving mathematical problems and reasoning tasks. These systems laid the groundwork for future breakthroughs in expert systems and knowledge representation.

Progress in artificial intelligence, on the other hand, was rather modest during the 1970s and 1980s. This was due to the fact that researchers experienced difficulties in scaling up symbolic techniques to deal with the complexity and ambiguity of the actual world. Connectionism and neural networks are two examples of alternative paradigms that emerged as a result of this phenomenon. These paradigms were inspired

by the structure and function of the human brain. The invention of the backpropagation algorithm in the 1980s by Rumelhart, Hinton, and Williams was an important milestone in the rebirth of neural networks. This technique gave neural networks the ability to learn from data and improve their performance over time.

The decade of the 1990s was marked by additional developments in artificial intelligence technologies, which were driven by discoveries in the fields of machine learning, natural language processing, and expert control. Several new potential for applications of artificial intelligence have emerged as a result of the abundance of digital data and the growth of the internet. These opportunities include search engines, recommendation systems, and data mining. Businesses such as Google, Amazon, and Netflix were among the first to implement AI-driven algorithms for the purpose of personalizing content and enhancing the user experience. These companies were essential in laying the groundwork for the era of big data and predictive analytics.

Artificial intelligence (AI) technologies have been catapulted to new heights in recent years as a result of the exponential proliferation of data and the introduction of deep learning. These developments have enabled machines to approach human-level performance in tasks such as picture identification, speech recognition, and natural language understanding. It has been demonstrated that deep learning models, which are powered by large-scale datasets and powerful graphics processing units (GPUs), have achieved outstanding achievements in a variety of fields, including healthcare and finance, autonomous cars and robotics.

Not only that, but the democratization of artificial intelligence has resulted in the broad use and incorporation of AI technology across a wide range of industries and sectors. As stated in a report published by IDC (2023), it is anticipated that the total amount spent on artificial intelligence systems across the globe will reach $554.3 billion by the year 2024, with a compound annual growth rate (CAGR) of 17.5% from 2019 to 2024. This highlights the revolutionary impact that artificial intelligence has had on business operations, customer experiences, and societal concerns. It also paves the way for a future in which intelligent machines will supplement human talents and drive innovation across all sectors of the economy.

The implementation of AI technologies in business process management has resulted in considerable enhancements to operational agility and adaptability. These enhancements have enabled firms to respond more effectively to shifting client needs and in the context of various market dynamics. According to the findings of a study conducted by Forrester Research (2021), businesses who have implemented AI in business process management have experienced a 35% boost in agility. This has enabled these businesses to innovate more quickly and adapt their strategies in response to changing market conditions. This increased agility can be credited to the capability of artificial intelligence to analyze massive volumes of data in real time, recognize emerging trends, and give actionable insights that enable enterprises to make informed decisions in a timely manner.

Additionally, business process management (BPM) that is powered by artificial intelligence is causing a revolution in the conventional methods of risk management and compliance by enabling firms to proactively detect and mitigate risks in their operations. According to research conducted by Accenture (2022), businesses that have implemented AI programs for risk management have seen a reduction of 46% in the number of compliance violations and a reduction of 32% in the amount of risk exposure. This allows firms to anticipate potential risks and compliance concerns early on, implement preventative measures, and maintain regulatory compliance, hence reducing financial losses and reputational harm. This is made possible through the utilization of predictive analytics and cognitive automation that are powered by artificial intelligence.

The incorporation of artificial intelligence technology into business process management is making it easier to migrate towards a corporate model that is more ecologically responsible and sustainable. The World Economic Forum (WEF) published a research in 2021 that highlights the fact that artificial intelligence-driven process optimization has the potential to contribute to considerable savings in energy consumption, waste generation, and carbon emissions. Organizations have the ability to lessen their impact on the environment and make a contribution to the global effort

to battle climate change if they optimize the allocation of resources, minimize waste, and improve energy efficiency.

A further benefit of AI-powered business process management is that it eliminates biases and hurdles to access, which in turn leads to increased inclusivity and diversity in the workforce. According to research conducted by DiversityInc (2021), businesses that have implementations of AI-driven recruiting and talent management systems have shown a sixty percent boost in diversity and inclusion KPIs. It is possible for artificial intelligence algorithms to assist in the reduction of unconscious biases in the process of recruiting, the identification of high-potential individuals from underrepresented groups, and the promotion of a more diverse and inclusive culture in the workplace, which in turn can drive innovation and creativity.

Nevertheless, in spite of the multiple advantages and possibilities that artificial intelligence (AI) in business process management (BPM) presents, enterprises are required to face the myriad ethical and societal issues that are linked with the broad deployment of AI technology. There are a number of possible concerns associated with AI-driven automation, including job displacement, wealth inequality, and societal instability, according to a study that was conducted by the Brookings Institution in the year 2020. It is necessary for legislators, business leaders, and members of civil society to work together in order to build ethical norms, regulatory frameworks, and social safety nets in order to be able to address these difficulties. This will ensure that the advantages of artificial intelligence are distributed in a manner that is equitable and inclusive across society.

The incorporation of artificial intelligence technology into business process management is, in conclusion, transforming the future of work, corporate operations, and society in general. By utilizing automation that is powered by artificial intelligence, predictive analytics, and cognitive automation, organizations have the capacity to improve their operational efficiency, generate revenue development, and stimulate innovation while simultaneously tackling major concerns such as risk management, sustainability, and diversity considerations. However, in order to fully exploit the potential of artificial intelligence in business process management (BPM),

it is necessary to make a determined effort to address ethical, societal, and legal factors. This is necessary in order to guarantee that the benefits of AI are achieved in a manner that is both equitable and sustainable.

1.2. Theoretical Basis and Digital Landscape

It is essential to have a solid understanding of the fundamental principles and technological advancements that are driving this revolutionary field in order to have a more comprehensive understanding of the theoretical foundations and digital environment of Artificial Intelligence (AI) technologies in Business Process Management (BPM).

AI, or artificial intelligence, is a field that encompasses a wide variety of technologies and methodologies that are designed to enable robots to perform tasks that often need the intelligence of humans. The field of business process management (BPM) has made machine learning (ML), a subset of artificial intelligence (AI), an essential component of its technological infrastructure. Without the requirement for explicit programming, it enables computers to learn from data, spot patterns, and make predictions without the need for explicit knowledge acquisition. The capabilities of artificial intelligence have been considerably improved as a result of deep learning, which is a more advanced kind of machine learning that takes its cues from the structure and operation of the human brain. This makes it possible for algorithms to examine massive amounts of disorganized data in a way that is both efficient and accurate.

Furthermore, the fields of natural language processing (NLP) and computer vision are bringing about a transformation in the manner in which businesses interact with data and information. Natural Language Processing (NLP) is a technology that enables machines to grasp, decipher, and generate human language. This enables humans and machines to communicate in a way that is both natural and effortless. Computer vision enables machines to receive and analyze visual input, which opens up prospects for automation and analysis in a variety of industries, including retail, healthcare, and manufacturing, among others.

Artificial intelligence (AI) in business process management (BPM) is characterized by a wide variety of cutting-edge technologies, platforms, and solutions that are designed to address particular business challenges and opportunities. There have been considerable improvements made in the areas of conversational artificial intelligence, predictive analytics, and autonomous systems as a result of the substantial expenditures that prominent technology businesses such as Google, Microsoft, and IBM are making in the field of artificial intelligence research and development. Furthermore, a dynamic network of developing organizations and rapidly rising enterprises is stretching the bounds of artificial intelligence advancement. This network is creating specialized solutions for a variety of industries, including banking, insurance, transportation, and supply chain management, among others.

It is not simply technological advancements that have an impact on the digital environment of artificial intelligence in business process management (BPM), but also legal frameworks, industry conventions, and ethical concerns. Nations and governing bodies all over the world are having a difficult time understanding the implications that automation powered by artificial intelligence will have on employment, privacy, and security. The General Data Protection Policy (GDPR) of the European Union is a good illustration of this principle. This policy imposes rigorous regulations on the collection, management, and storage of personal information. In order to comply with this policy, businesses are required to ensure that their artificial intelligence activities are transparent, responsible, and that proper data protection measures are taken.

Industry consortia and standards bodies are working together to define ideal methodologies and principles for the development and deployment of artificial intelligence technologies in business process management (BPM) in a manner that is both ethical and efficient. In order to promote interoperability, fairness, and transparency in artificial intelligence (AI) systems, the Institute of Electrical and Electronics Engineers (IEEE) and the International Organization for Standardization (ISO) are now working on the development of standards and frameworks. These efforts are necessary for developing faith and certainty in artificial intelligence technologies

and ensuring that these technologies are able to bring tangible benefits to enterprises and society as a whole.

The digital environment of artificial intelligence in business process management is characterized by the convergence of technologies such as blockchain, Internet of Things (IoT), and edge computing. These technologies are revolutionizing the way in which businesses manage and improve their processes. The technology known as blockchain makes it possible to conduct transactions that are both secure and transparent, as well as to trace supply chains and create smart contracts. Internet of Things devices, on the other hand, provide real-time data streams and sensor data that may be utilized for artificial intelligence-driven analytics and decision-making. On the other hand, edge computing makes it possible for artificial intelligence algorithms to be implemented directly on devices or sensors. This reduces the amount of latency and bandwidth that is required, while simultaneously ensuring that data privacy and security are preserved.

This enables businesses to make use of AI capabilities without having to make significant initial investments in infrastructure. According to a survey that was released by Gartner in the year 2021, it is anticipated that the amount of money spent on artificial intelligence (AI) services that are hosted on the cloud will reach $49.3 billion by the year 2025. Under these circumstances, the compound annual growth rate (CAGR) from the year 2020 to the year 2025 would be 33.5%. The huge expansion brings to light the increasing reliance on artificial intelligence (AI) solutions that are hosted in the cloud to support business operations and to encourage innovation in a variety of industries.

Additionally, edge computing technologies make it possible to directly deploy artificial intelligence models on edge devices such as sensors, cameras, and electronic devices like smartphones. The processing and analysis of data can now take place immediately at the edge of the network thanks to this. The International Data Corporation (IDC) published a study in 2022 that anticipated that by the year 2025, the investment on edge artificial intelligence (AI) hardware, software, and services would reach a total of $96 billion. The majority of this expansion can be ascribed to the

growing number of Internet of Things (IoT) devices as well as the demand for artificial intelligence applications that require rapid response times and efficient performance. Edge computing reduces the amount of latency and bandwidth that is required, while simultaneously enhancing data privacy and security. This is accomplished via the local processing of sensitive data, which eliminates the need for constant access to centralized cloud servers.

The advent of industry-specific AI platforms and ecosystems that are designed to fulfill the particular requirements and challenges of various industries is another feature that distinguishes the digital environment of artificial intelligence in business process management (BPM). IBM Watson Health and NVIDIA Clara are two examples of AI-powered platforms that are transforming clinical decision-making, medical imaging, and the procedures involved in the discovery of new drugs in the healthcare industry. Because of this shift, patient outcomes are improved, and the costs associated with healthcare are reduced. Manufacturing companies are implementing artificial intelligence systems such as Siemens MindSphere and GE Predix in order to improve the efficiency of their production processes, predictive maintenance, and supply chain management. Both operational efficiency and competitiveness are improved as a result of this deployment.

Furthermore, the digital landscape of artificial intelligence in business process management is being reshaped as a result of the integration of AI with other revolutionary technologies such as 5G networks, augmented reality (AR), and digital twins. As a result of this convergence, further opportunities for innovation and disruption are being created. The increasing use of artificial intelligence (AI)-powered Internet of Things (IoT) devices and autonomous systems is being made possible by the high-speed and low-latency connectivity offered by 5G networks. This is resulting in substantial revolutions in various industries, including transportation, logistics, and smart cities. Augmented reality (AR) technologies, like as Microsoft HoloLens and Google Glass, are enhancing worker productivity, training, and collaboration by superimposing digital information onto the physical world. This enables interactions that are both immersive and engaging.

Furthermore, digital twins, which are virtual counterparts of physical assets, processes, and systems, are enabling businesses to simulate, evaluate, and optimize their operations in real time by applying AI-powered analytics and predictive modeling; this is a significant advancement in the field of artificial intelligence. An analysis that was carried out by MarketsandMarkets in the year 2021 indicates that the market for digital twin technologies is anticipated to reach a value of $48.2 billion by the year 2026. This expansion can be primarily attributable to the increasing adoption of technologies such as artificial intelligence (AI), the Internet of Things (IoT), and cloud computing. Through the facilitation of proactive maintenance, energy optimization, and asset performance management, digital twins are causing a transformation in a number of different industries, including construction, manufacturing, and energy; respectively.

The widespread presence of AI-driven business applications and platforms is another characteristic of the digital environment of artificial intelligence in business process management (BPM). These applications and platforms are altering the way in which businesses manage their operations, interact with customers, and encourage innovation. On the other hand, Grand View Research (2021) forecasts that by the year 2028, the global market for AI-powered business process management software would have reached a value of $25.4 billion. The growing demand for solutions that are capable of automation, analytics, and optimization will be the driving force behind this expansion. These platforms, which are driven by artificial intelligence, offer a wide range of capabilities, including the ability to automate processes, analyze data in order to make predictions, evaluate sentiment, and generate suggestions. The ability to enhance productivity, reduce expenses, and create excellent customer experiences is made possible for businesses as a result of this.

The growing significance of data governance, privacy, and security in AI-powered business processes is a significant factor that shapes the digital environment of artificial intelligence in business process management (BPM). The relevance of data privacy, security, and compliance has become of the utmost significance as a result of the growing acquisition and evaluation of substantial data by businesses for the goal of

training artificial intelligence models and affecting decision-making. A survey that was carried out by Deloitte in the year 2021 found that 68 percent of enterprises regard data privacy and security to be their primary issues in relation to their activities with artificial intelligence. When it comes to protecting sensitive data and ensuring compliance with regulatory requirements in AI-powered business process management, the deployment of strong data governance frameworks, encryption techniques, and access restrictions is absolutely necessary.

A further point to consider is that the shifting dynamics of collaboration between humans and machines in the workplace have an impact on the digital environment of artificial intelligence in business process management. Research conducted by the McKinsey Global Institute in 2022 challenges the widely held idea that artificial intelligence will succeed human laborers. On the contrary, it seems to imply that artificial intelligence is more likely to improve human capabilities and to make it easier for fresh forms of collaboration and invention. The automation of tedious tasks, the improvement of decision-making processes, and the facilitation of individualized relationships with customers are all ways in which artificial intelligence technologies empower employees. Consequently, this enables workers to devote their time and energy to activities that are more beneficial to the organization, such as creative problem-solving, strategic planning, and innovation. In this day and age of digital technology, the interdependent interplay between humans and machines is bringing about a fundamental transformation in the way that businesses are formed, the skills that are required, and the dynamics of the workforce.

The digital environment of artificial intelligence in business process management is characterized by the widespread availability of AI tools and technology, which makes them more accessible to establishments of varying sizes and sectors. Open-source artificial intelligence frameworks such as TensorFlow, PyTorch, and scikit-learn have made it possible for a greater number of people to access artificial intelligence algorithms and models. Consequently, this has made it possible for developers and data scientists to easily and affordably construct and implement artificial intelligence solutions. Small and medium-sized businesses (SMEs) and

startups now have access to artificial intelligence (AI) capabilities thanks to cloud-based artificial intelligence (AI) systems such as Microsoft Azure AI, Google AI Platform, and IBM Watson Studio. These AI systems offer AI services that are both flexible and cost-effective. Businesses are able to compete and develop without being constrained by their size or resources as a result of the process of democratizing artificial intelligence (AI), which is creating an environment that is more equitable and fair.

Furthermore, the rising emphasis on responsible AI development and deployment methodologies is shaping the digital environment of artificial intelligence in business process management (BPM). There is a heightened focus on problems of bias, fairness, and accountability as a result of the increased integration of artificial intelligence technology into important business processes and decision-making systems. In a survey that was carried out by KPMG in the year 2021, it was discovered that 84 percent of businesses find responsible artificial intelligence to be of the utmost significance. It is clear from this that they recognize the significance of ethical concerns in the process of developing and utilizing artificial intelligence. The incorporation of fairness-aware algorithms, bias mitigation strategies, and explainable AI approaches is very necessary in order to ensure the ethical and transparent operation of artificial intelligence systems in a wide range of circumstances that are constantly evolving in the commercial world.

The digital environment of artificial intelligence in business process management is differentiated by the increasing emphasis placed on continuous learning and skill building in order to fulfill the ever-evolving requirements of AI-driven business responsibilities. According to the findings of a survey conducted by LinkedIn in 2021, there has been a substantial rise in the demand for artificial intelligence capabilities such as machine learning, data science, and natural language processing. At a pace of 32% every year, the number of job advertisements for positions related to artificial intelligence has been growing. There is a growing demand for individuals who possess the requisite technical skills and specialized expertise to efficiently build, install, and maintain artificial intelligence systems. This demand is a direct result of

the growing adoption of artificial intelligence technology and automation solutions by businesses. For the purpose of preserving their employment opportunities and preserving their competitive edge in the labor market, professionals are increasingly adopting upskilling programs, online courses, and certifications in artificial intelligence and data science.

To add insult to injury, the digital environment of artificial intelligence (AI) in business process management (BPM) is being influenced by the growing significance of collaborative ecosystems and partnership models in order to encourage innovation and extend AI projects. The findings of a study conducted by PricewaterhouseCoopers (PwC) in 2022 indicate that 84 percent of executives believe that partnerships and collaborations are essential for increasing the application of artificial intelligence and generating significant commercial benefits. Enterprises have the ability to utilize additional knowledge, resources, and talents by forming partnerships with technology suppliers, research institutes, and peers in the industry. This allows them to hasten the innovation of artificial intelligence and overcome difficulties in its deployment. Organizations have the ability to employ ecosystem alliances and strategic partnerships in order to gain access to information, ideas, and networks from the outside world. Because of this, they are able to establish new opportunities, lessen the likelihood of potential threats, and keep a competitive edge in the fast developing digital economy.

The shifting regulatory and ethical considerations that are associated with AI-powered decision-making and automation have an impact on the digital environment of artificial intelligence in business process management (BPM). According to the findings of a poll that was carried out by EY in the year 2021, 76 percent of customers have expressed concern over the ethical implications of artificial intelligence. These concerns include issues such as discrimination, bias, and breaches of privacy. The Artificial Intelligence Act of the European Union and the Algorithmic Accountability Act of the United States are both examples of regulatory frameworks that aim to address these issues by establishing rules for the responsible development and application of artificial intelligence systems. For the purpose of ensuring that their artificial intelligence initiatives are in accordance with legal, ethical, and societal

standards, organizations need to navigate complex regulatory environments and build robust governance, risk, and compliance (GRC) frameworks.

The expanding integration of artificial intelligence with other emerging technologies, such as blockchain, quantum computing, and advanced analytics, has an effect on the digital domain of artificial intelligence in business process management (BPM). According to a survey published by Deloitte in 2021, 63 percent of companies believe that artificial intelligence would have a significant impact on their utilization of blockchain technology within the next three years. Enterprises have the potential to enhance trust, transparency, and security in a variety of business operations by integrating artificial intelligence and blockchain technology. These activities include the management of supply chains, the verification of identities, and the processing of financial transactions. The enormous processing power and computational capabilities of quantum computing have the potential to completely revolutionize what artificial intelligence systems are currently capable of. It is able to ease the processing of complex data sets and optimization difficulties in a speedier and more effective manner. Prescriptive analytics and causal inference are two examples of advanced analytics methodologies that are being utilized by organizations in order to obtain actionable insights from AI-driven models. This enables better decision-making and the optimization of performance in business operations, which are both positive outcomes.

For the purpose of providing a concise summary, the theoretical foundation and digital environment of Artificial Intelligence (AI) in Business Process Management (BPM) are characterized by the convergence of technological advancement, regulatory variables, and industrial trends. It is possible for organizations to leverage the revolutionary potential of artificial intelligence by gaining an understanding of the fundamental principles and emerging technologies that are driving the advancement of AI. This will allow them to optimize operations, improve decision-making, and achieve sustainable growth in the present digital-centric economy.

1.3. The current state of development of Artificial intelligence technologies in business process management

It is a dynamic ecosystem that is defined by rapid innovation, growing capabilities, and increasing adoption across industries. This is reflected in the current level of development of Artificial Intelligence (AI) technologies in business process management (BPM). Utilizing business process management (BPM) solutions that are powered by artificial intelligence (AI) allows organizations to improve decision-making, optimize processes, and gain a competitive advantage in today's digital economy.

One of the most important aspects of the current state of artificial intelligence in business process management is the development of automation tools and platforms that are powered by AI. These tools and platforms enable businesses to simplify repetitive activities, enhance operational efficiency, and save costs. Automation that is powered by artificial intelligence has the potential to enhance productivity by as much as forty percent in a variety of industries, including retail, finance, and manufacturing, according to a report that was published by McKinsey & Company in the year 2021. Robotic process automation (RPA), natural language processing (NLP), and machine learning (ML) are examples of artificial intelligence technologies that are being incorporated into business process management (BPM) systems in order to automate mundane operations like as data entry, document processing, and interactions with customer care representatives. For instance, businesses such as UiPath, Automation Anywhere, and Blue Prism provide RPA solutions that are powered by artificial intelligence. These solutions equip enterprises with the ability to automate business processes across departments and functions, which results in considerable time and cost savings.

The rise of AI-driven analytics and insights generation is another important component of the current state of artificial intelligence in business process management (BPM). These capabilities enable businesses to extract actionable insights from massive amounts of data and to make choices based on the data in real time. The

business process management (BPM) industry is utilizing artificial intelligence (AI) technologies such as predictive analytics, prescriptive analytics, and cognitive computing to analyze historical data, recognize trends and patterns, and estimate future outcomes. A survey conducted by Gartner (2021) found that 73 percent of firms have either already invested in AI-driven analytics or have plans to engage in such analytics in order to enhance decision-making and obtain a competitive advantage. Examples of firms that use artificial intelligence algorithms include IBM Watson Analytics, SAS Visual Analytics, and Tableau. These companies use these algorithms to analyze complicated data sets, find insights that were previously hidden, and develop interactive visuals that allow users to explore data and make meaningful decisions.

In addition, the current state of artificial intelligence in business process management is characterized by the integration of AI-driven decision support systems. These systems offer users recommendations, insights, and ideas in real time based on data analysis and predictive modeling. Decision trees, neural networks, and reinforcement learning algorithms are examples of artificial intelligence technologies that are being implemented in business process management (BPM) systems to provide users with assistance in making complicated decisions, optimizing resource allocation, and limiting risks. For instance, recommendation engines that are powered by artificial intelligence are being utilized in e-commerce platforms in order to personalize product recommendations for customers based on characteristics such as their browsing history, purchasing behavior, and preferences. Supply chain optimization systems that are powered by artificial intelligence are also assisting businesses in optimizing their inventory levels, reducing their transportation expenses, and improving their delivery performance. These systems do this by analyzing demand projections, production schedules, and logistical data.

Furthermore, the current status of artificial intelligence in business process management is influenced by the growing importance of explainable artificial intelligence (XAI) and AI transparency. These two concepts strive to improve trust, responsibility, and understanding of decisions and results that are driven by AI. At the same time that artificial intelligence technologies are becoming more and more

integrated into essential business processes and decision-making systems, there is a growing demand for transparency and interpretability in order to guarantee that decisions powered by AI are just, impartial, and in line with the objectives and principles of the company. Sixty-eight percent of CEOs, according to a survey conducted by Deloitte (2022), believe that explainability and openness are crucial criteria to consider when using artificial intelligence technologies. In order to give consumers with insights into how artificial intelligence algorithms generate decisions, which variables are driving predictions, and what factors influence results, organizations are investing in XAI techniques such as interpretable machine learning models, model explainability tools, and transparency dashboards. XAI enables enterprises to develop trust with stakeholders, comply with regulatory standards, and limit the risks associated with AI-driven decision-making. This is accomplished by boosting transparency and accountability inside the organization.

Furthermore, the current state of development of artificial intelligence technologies in business process management (BPM) is also characterized by the growing adoption of AI-driven virtual assistants and chatbots. These technologies enable businesses to improve their customer service, increase employee productivity, and automate routine tasks. Gartner (2021) has predicted that by the year 2025, artificial intelligence-driven virtual assistants will handle eighty percent of all contacts with customer service representatives. Artificial intelligence (AI) technologies such as natural language understanding (NLU) and speech recognition are utilized by virtual assistants like Amazon Alexa, Google Assistant, and Apple Siri in order to communicate with people, provide answers to questions, and carry out tasks on their own. Virtual assistants and chatbots are being included into customer support systems, helpdesk applications, and internal collaboration platforms in the context of business process management (BPM). This is being done in order to provide employees and customers with rapid access to information, resources, and support. As an illustration, businesses such as Salesforce, Zendesk, and Freshworks use chatbots that are powered by artificial intelligence. These chatbots enable businesses to automate responses to

frequently asked questions, triage support tickets, and escalate complex issues to human agents in a seamless manner.

A further factor that has an impact on the current status of artificial intelligence in business process management is the growing emphasis placed on AI governance, ethics, and responsible AI practices. This is done in order to address issues regarding bias, fairness, and accountability in AI-driven decision-making. When it comes to the deployment of artificial intelligence systems, 84 percent of CEOs believe that ethics and ethical AI practices are significant concerns. This information comes from a poll conducted by Deloitte (2021). For the purpose of ensuring that artificial intelligence systems are developed, deployed, and maintained in a responsible and ethical manner, organizations are investing in governance frameworks for artificial intelligence, ethical norms, and algorithmic auditing methods. Companies such as IBM, Microsoft, and Google, for instance, have established AI ethics boards, advisory councils, and review committees in order to monitor the development and deployment of artificial intelligence technologies and to verify that they comply with ethical standards such as fairness, transparency, and accountability. The incorporation of ethical considerations into the design and deployment of artificial intelligence systems allows enterprises to cultivate responsible AI innovation, in addition to fostering trust with stakeholders and mitigating risks.

In addition, the current state of artificial intelligence in business process management is characterized by the growing relevance of AI explainability and interpretability. This is done to enable users to understand how AI algorithms make decisions, which factors influence outcomes, and what potential biases or restrictions may exist. Sixty-two percent of CEOs, according to a study conducted by Accenture (2022), believe that the ability of artificial intelligence to explain itself is essential for establishing trust and confidence in AI-driven systems. In order to give consumers with insights into the inner workings of AI models and to enable them to interpret and trust judgments generated by AI, organizations are investing in explainable artificial intelligence (XAI) approaches such as model transparency, feature importance analysis, and counterfactual explanations. As an illustration, businesses such as

Explainable AI, Fiddler Labs, and Truera provide XAI platforms that make it possible for organizations to evaluate, illustrate, and explain the behavior of AI models to stakeholders, regulators, and end-users. XAI enables enterprises to avoid the risks of unintended effects, biases, and errors in AI-driven decision-making and to develop trust with stakeholders. This is accomplished by enhancing transparency and interpretability.

Furthermore, the current state of development of artificial intelligence technologies in business process management (BPM) is also influenced by the growing emphasis on AI-driven decision-making systems. These systems enable organizations to harness the power of data analytics and machine learning algorithms in order to make decisions that are data-driven in real-time. According to a study that was conducted by McKinsey (2021), businesses that make extensive use of decision-making systems that are driven by artificial intelligence have the potential to boost their profitability by as much as thirty percent by the year 2030. These systems make use of artificial intelligence technologies such as predictive analytics, prescriptive analytics, and reinforcement learning in order to automatically analyze vast amounts of data, recognize trends, and optimize business processes. AI-driven decision-making systems are being used in many domains within the context of business process management (BPM). These areas include supply chain management, financial forecasting, risk management, and strategic planning. The utilization of these systems is aimed at optimizing resource allocation, minimizing costs, and maximizing performance. Companies such as Walmart, Amazon, and FedEx, for instance, use decision-making systems that are driven by artificial intelligence in order to optimize inventory management, predict customer demand, and expedite logistics operations. This results in considerable cost savings and operational efficiencies.

As an additional point of interest, the current status of artificial intelligence in business process management is defined by the rapid integration of AI technologies with emerging digital technologies such as the Internet of Things (IoT), blockchain, and edge computing. This connection enables real-time monitoring, analysis, and automation of business processes. A report published by IDC (2022) projects that by

the year 2024, spending on software platforms and solutions that use artificial intelligence would have reached a total of $98.4 billion. This figure is a reflection of the growing usage of AI technology across many industries. In order to analyze streaming data from Internet of Things devices, identify abnormalities, and initiate automatic actions in response to changing conditions, these AI-infused platforms and solutions make use of modern AI algorithms and techniques. Within the realm of business process management (BPM), platforms and solutions that incorporate artificial intelligence are being utilized to monitor the performance of equipment, optimize energy usage, and improve operational efficiency in the manufacturing, utility, and smart city sectors. Examples of firms that offer solutions that use artificial intelligence are Siemens, General Electric, and Schneider Electric. These companies offer solutions that enable predictive maintenance, asset optimization, and energy management. These solutions assist enterprises in improving asset reliability, reducing downtime, and increasing productivity.

A further factor that is shaping the current state of artificial intelligence in business process management is the growing significance of AI-driven personalization and customization in order to cater to the varied requirements and preferences of stakeholders, employees, and customers. Seventy-two percent of consumers, as indicated by a poll conducted by Salesforce (2021), anticipate that companies will comprehend their requirements and anticipations, hence indicating the necessity for individualized experiences. The analysis of consumer data, the segmentation of audiences, and the delivery of personalized products, services, and suggestions in real time are all being accomplished with the help of artificial intelligence technologies such as machine learning, natural language processing, and recommendation systems. When it comes to business process management (BPM), personalization and customization that are driven by artificial intelligence are being implemented in areas such as marketing, sales, customer support, and product development in order to improve consumer engagement, loyalty, and satisfaction. Companies such as Netflix, Spotify, and Amazon, for instance, employ recommendation systems that are powered by artificial intelligence to tailor content, music, and product recommendations for

users based on their preferences, browsing history, and behavior patterns. This results in greater customer satisfaction and retention rates.

In addition, the adoption of artificial intelligence technologies in conjunction with robotic process automation (RPA) is causing a revolution in the management of business processes by automating operations that are repetitive and optimizing workflows. By automating typical operations like data input, invoice processing, and customer service, businesses that take advantage of robotic process automation (RPA) and artificial intelligence (AI) technology can realize cost savings of up to thirty percent, as stated in a report published by Gartner (2021). These RPA systems that are powered by AI make use of machine learning algorithms to evaluate unstructured data, extract essential information, and make intelligent judgments. As a result, they enhance the efficiency of the process while simultaneously minimizing the amount of manual intervention required. RPA solutions that are powered by artificial intelligence are being implemented across a variety of industries in the context of business process management (BPM) in order to automate back-office tasks, improve customer support procedures, and speed up digital transformation initiatives. As an illustration, businesses such as UiPath, Automation Anywhere, and Blue Prism provide RPA platforms that are powered by artificial intelligence. These platforms enable businesses to automate business processes from beginning to finish, beginning with data ingestion and validation and ending with decision-making and reporting. This provides organizations with enhanced productivity and scalability.

As an additional point of interest, the current state of artificial intelligence in business process management is characterized by the advent of AI-driven process discovery and optimization tools. These tools enable enterprises to independently analyze, visualize, and enhance their business processes. The findings of a study conducted by Forrester (2021) indicate that businesses that make use of AI-driven process discovery and optimization tools have the potential to cut process inefficiencies by as much as fifty percent and boost process throughput by as much as thirty percent. Process mining, machine learning, and optimization approaches are some examples of the advanced artificial intelligence algorithms that are utilized by these tools in order

to evaluate process data, locate bottlenecks, and make recommendations for process changes. Artificial intelligence-driven process discovery and optimization technologies are being utilized in the context of business process management (BPM) in order to determine the underlying causes of process inefficiencies, forecast the outcomes of processes, and simulate process improvements prior to their implementation. For instance, companies such as Celonis, Signavio, and Software AG provide platforms for process mining and optimization that are powered by artificial intelligence. These platforms enable businesses to gain insights into their business processes, recognize opportunities for optimization, and drive continuous process improvement, which ultimately leads to increased operational efficiency and improved business outcomes.

Additionally, the current state of artificial intelligence in business process management is influenced by the increasing adoption of chatbots and virtual assistants that are powered by AI in order to improve employee productivity and customer service. A survey conducted by Oracle (2021) found that eighty percent of organizations intend to employ chatbots for consumer interactions by the year 2022. This finding reflects the growing demand for conversational AI solutions that are driven by artificial intelligence. The use of natural language processing (NLP) and machine learning algorithms allows these chatbots and virtual assistants to comprehend customer inquiries, supply pertinent information, and carry out activities on their own. As a result, the need for human intervention is reduced, and response times are improved. Within the framework of business process management (BPM), chatbots and virtual assistants powered by artificial intelligence are being used in a variety of sectors, including as customer support, IT service management, and human resources, with the purpose of automating routine inquiries, resolving difficulties, and facilitating self-service interactions. Companies such as IBM, Google, and Microsoft, for instance, provide chatbot platforms that are powered by artificial intelligence. These platforms enable businesses to construct, deploy, and manage chatbots across multiple channels, such as websites, mobile applications, and messaging platforms. This, in turn, leads to increased customer satisfaction and operational efficiency.

As a conclusion, the current stage of development of artificial intelligence technology in business process management is defined by rapid innovation, expanding capabilities, and increasing adoption across industries. AI-driven decision-making systems, AI-infused platforms and solutions, AI-powered robotic process automation (RPA), AI-driven process discovery and optimization tools, and AI-driven chatbots and virtual assistants are all being utilized by organizations in order to optimize processes, improve decision-making, automate tasks, and enhance customer service. In today's digital economy, firms have the ability to unleash new potential for development, innovation, and competitive advantage by embracing artificial intelligence technology and integrating them into their business operations.

CHAPTER 2.
ANALYTICAL STUDY OF "ADVERTISING AND PRODUCTION GROUP NBS "

2.1. Overview of "NBS"

During the time that I worked at NBS as a management assistant, I had the opportunity to gain a comprehensive understanding of the complex structure of the company's corporate entity. This was a wonderful experience for me. My awareness of the company's fundamental values, mission, and operational procedures significantly improved as a result of the extensive familiarization phase, which played a crucial role in the development of my perspective and facilitated its facilitation.

The NBS operates within a complete framework that effectively blends innovation, efficiency, and a strong focus on customer satisfaction. This framework enables the NBS to operate efficiently. In every facet of its business, the company's activities reflected the clear evidence of a dedication to the achievement of high performance standards. It is clear, based on my preliminary interactions with coworkers and my views of high-level strategy sessions, that NBS places a great deal of focus on establishing a culture of continuous improvement and an uncompromising dedication to the highest possible standards of performance.

One of the most remarkable features of the business entity that NBS was the substantial emphasis it placed on research and development. The company has put a significant amount of money into researching cutting-edge technology and developing market trends in the industry as part of its research and development efforts. Not only did the commitment to staying ahead of industry trends illustrate NBS's innovative attitude, but it also highlighted the company's proactive posture in the extremely competitive market climate. I was able to gain a first-hand understanding of the company's dedication to innovation through the process of actively contributing to the collaborative efforts of research teams and actively attending presentations on ongoing projects.

In addition, the organizational structure of NBS was meticulously designed with the goal of encouraging collaboration as well as cooperation across disciplinary lines. The different departments displayed a seamless level of contact with one another, which resulted in a synergistic effect that considerably increased output and made it easier to find solutions to problems. The organizational structure within the company not only reflected the hierarchical authority that existed within the company, but it also acted as an expression of the individuals' respective areas of specialty as well as their acquired levels of experience. Because each individual on the team was valued for the unique combination of qualities and contributions they brought to the table, an atmosphere of cohesiveness and mutual respect was cultivated. This was true regardless of the member's position on the team.

An intriguing aspect of the organization's corporate structure was the expansive international presence that it maintained on multiple continents. The NBS has been very successful in establishing a significant global footprint, which is exemplified by the fact that its offices and clientele can be found in a wide range of countries and cultures. The expansion of the company's global footprint resulted in an enhanced market reach; nevertheless, this was accompanied by specific obstacles due to the complexities of other cultures, the changes in regulatory standards, and the requirements of the market. In order to function efficiently in the contemporary international setting, a profound knowledge of the norms that govern international commerce was required. I was given the opportunity to participate in meetings that explicitly addressed these difficult issues, which resulted in an increase in my level of experience in this area.

In addition, NBS displayed a substantial focus on corporate social responsibility (CSR) activities, which exemplified a real dedication to making a positive contribution to the general well-being of the community. I was an active participant in efforts relating to the preservation of the natural environment, the advancement of the community, and the dissemination of educational information. The realization that these efforts resulted in positive outcomes has helped shed light on the ethical business

practices of NBS as well as its dedication to fulfilling its commitments as a socially responsible corporate organization.

The firm shown an impressive level of financial acumen by placing an emphasis on careful fiscal administration and intelligent investment choices. My involvement in the financial assessments and sessions for preparing the budget at NBS provided me with invaluable insight into the specific financial processes that are utilized by the organization. The focus that the corporation placed on maintaining financial stability and planning for the long term served to highlight the organization's commitment to enduring growth and adaptability in the face of shifting economic conditions.

In conclusion, the extensive time I spent working with the company known as NBS was an educational experience that deepened my comprehension of the complexity involved in the process of successfully managing a successful firm. The dedication of the organization to promoting innovation, promoting cooperation, engaging in global outreach, upholding corporate social responsibility, and practicing careful financial management collectively created a comprehensive image of a prosperous corporate entity. This was achieved by practicing corporate social responsibility, supporting corporate social responsibility, and practicing cautious financial management. Not only did the acquisition of this knowledge strengthen my skill in the professional domain, but it also served as a source of motivation for me to face future endeavors with a comparable combination of zeal, strategic foresight, and moral accountability. This was made possible as a result of the fact that my professional expertise was able to be elevated. The priceless knowledge that I gained throughout my time at NBS remains with me as I advance in both my academic and professional trajectories. These insights have helped shape my perspective and given me a sense of where I want to go professionally in the field of business.

The analysis of NBS's economic planning and activity sheds light on the methodical strategies and deliberative decision-making processes that lie at the heart of the company's remarkable financial accomplishments. NBS possessed a thorough understanding of the dynamics of the market, and it utilized strategic planning in order to successfully navigate the complexities of the always shifting business environment.

The efforts put into economic planning were distinguished by a painstaking analysis of market tendencies, consumer behavior, and the dynamics of competition. It is remarkable that the company exhibited both agility and insight in that it was able to anticipate changes in the market and rapidly adapt its strategies in response to those changes.

The financial planning at NBS was differentiated by a complete approach that contained a synchronized focus on both short-term goals and long-term viability. This strategy was the key to the company's success. The budgetary allocations were determined in a sensible manner, ensuring that expenditures were in accordance with revenue streams and growth goals by ensuring that they were in line with those objectives. Investors and other stakeholders have developed a sense of certainty as a direct result of the implementation of strong financial management techniques, which has led to the creation of a stable financial climate that encourages both growth and innovation. The fact that the company places a high priority on maintaining healthy profit margins while at the same time devoting resources to research and development as well as the health and happiness of its workforce is evidence of the company's commitment to guaranteeing long-term economic viability.

In addition, NBS shown both a disciplined approach to their financial situation as well as a proactive effort towards diversification and extension of their business. These initiatives were backed by extensive market research and risk assessments, which enabled the business to enter markets with the potential for growth while simultaneously limiting potential dangers. NBS was able to lessen its reliance on specific market segments by strengthening its ability to withstand economic swings and industry-specific obstacles through the implementation of diversification techniques. In addition, the organization's strategy for resource allocation demonstrated a high level of efficiency. NBS made use of cutting-edge technology and data analytics in order to improve the effectiveness of its production processes, cut down on waste, and make its operations more efficient overall. The emphasis that was placed on resource optimization not only helped the company improve its financial performance, but it also proved the organization's dedication to environmental

sustainability, integrating the company's economic goals with ecological accountability in the process.

Because it was firmly established in the values of social responsibility, the economic activity that NBS engaged in went well beyond the simple objective of maximizing profits. The company took an active part in boosting the regional economy by creating new job openings and offering assistance to small businesses that were a part of the supply chain. In doing so, the company displayed an entrepreneurial spirit. In addition, NBS made investments in community development initiatives, educational programs, and healthcare services, which contributed to an improvement in the social fabric of the areas in which it operated businesses. The blending of financial incentives and social welfare in economic activities demonstrated NBS's commitment to corporate social responsibility and reflected an approach that was comprehensive in nature.

In addition, the company's economic plan spanned global markets, which required deft navigation of a variety of regulatory systems in addition to the cultural complexities that were present in each country. In a clear demonstration of its dedication to respecting local customs and standards while preserving international quality standards, NBS successfully adapted its strategies so that they were in line with each of the varied geographical regions they operated in. The implementation of this nuanced strategy has been a significant factor in the company's success in entering a variety of new international markets and has contributed to the enterprise's ongoing expansion within these geographic areas. This indicates the company's profound understanding of the workings of the global economic system.

It becomes clear, when conducting additional research into the economic strategy and activities of NBS, that the organization has its foundations firmly planted in the realms of innovation and research. It was clear that the company was committed to maintaining its position at the forefront of technological advancement based on the sizeable amount of resources it devoted to research and development (R&D) activities. NBS was able to establish an atmosphere that fostered innovative thinking by providing its teams with the tools and the freedom they required to pursue ground-

breaking ideas. Not only did the presence of an innovative culture inside the company drive the efforts of the company in developing new goods, but it also enabled the development of intellectual property, which helped to establish NBS as a major figure within its industry.

In addition, the formation and maintenance of strategic alliances and partnerships were a part of the economic planning that NBS carried out. The company took the initiative to seek out relationships with other organizations operating within the sector, such as newly established businesses and research institutes. The selection of these connections was carried out with great care, and the utmost attention was paid to ensuring that they were congruent with the strategic goals of NBS and that they supplemented its core competencies. NBS has the ability to make use of pooled expertise, resources, and market opportunities if it forms symbiotic connections with other organizations. This would enable NBS to facilitate reciprocal growth while also increasing its advantage over its competitors.

In addition to this, a robust risk management framework underpinned the economic activities that NBS was engaged in. The company carried out a comprehensive analysis of the potential risks facing the company, taking into account a wide variety of factors such as fluctuations in the market, geopolitical unpredictability, interruptions in the supply chain, and changes in regulatory requirements. By anticipatorily identifying and evaluating these risks, NBS was able to establish contingency plans and mitigation measures, which enabled the company to maintain commercial operations despite the occurrence of unanticipated problems. Investor confidence was bolstered as a result of the corporation's adoption of a cautious approach to risk management, which also made it possible for the business to successfully traverse periods of economic volatility.

The economic planning that was done by NBS displayed an expanded scope that went beyond the traditional constraints that were set, and it included the digital sphere. The company recognized the enormous potential offered by digital technologies and set about implementing digitalization initiatives with the goals of enhancing both the efficiency of internal operations and the quality of interactions with customers. NBS

was able to effectively improve its operational efficiency, reduce the occurrence of human errors, and get significant insights into the behavior of its customers by embracing technologies such as automation, data analytics, and artificial intelligence. The firm has been able to demonstrate its adaptability to the digital era as a consequence of the implementation of digital transformation, which has resulted in improved operational efficiency and the investigation of innovative revenue streams.

The research of the marketing and logistics management at NBS found a complicated system that seamlessly integrated innovation, market intelligence, and operational success. NBS's marketing strategies stood out from the competition thanks to the company's deep understanding of consumer behavior and the evolution of the market. The company conducted an analysis of customer preferences using data-driven approaches, which allowed them to tailor their products and services to meet evolving market requirements and satisfy the preferences of individual customers. Market segmentation was not only a strategic strategy, but more of a well-refined craft that was intended to ensure that the offerings of NBS effectively appealed to various sections of the audience. The goal of this craft was to ensure that the offerings of NBS effectively appealed to various sectors of the audience.

NBS has eagerly adopted digital marketing channels, making great use of search engine optimization, social media platforms, and concentrated online advertising methods. The company's online presence not only served as a platform for exhibition, but also as an interactive environment in which customers actively connected with the brand. This allowed the company to better understand its customers' needs and interests. Advertisements on social media were deliberately crafted with creativity and precision, in order to spark conversations and evoke genuine responses from users. The two-way flow of information not only increased customer loyalty to the brand, but it also provided invaluable feedback that was used to enhance both the quality of products and the level of service they provided.

NBS displayed great marketing capabilities, which were matched by their extremely effective logistics management system. This system enabled effective facilitation of the timely delivery of commodities to customers, hence optimizing the

efficiency of operational processes. The optimization of the supply chain was a primary priority, and a comprehensive analysis and simplification of each link in the chain, ranging from distributors to suppliers, was carried out as part of this effort. NBS was able to pro-actively anticipate fluctuations in demand thanks to the installation of real-time tracking systems and predictive analytics, which enabled them to make the necessary modifications to inventory levels. By efficiently reducing instances of stockouts and excessive inventory, the ability to properly anticipate future needs and requests helped achieve a careful equilibrium between meeting the expectations of customers and ensuring cost efficiency.

In order to reduce the amount of carbon dioxide that the firm emits into the atmosphere, the logistics department at NBS has implemented environmentally responsible practices. These practices include the search for more eco-friendly packaging materials and the optimization of shipping routes. The commitment to environmental stewardship was not only a formal fulfillment of the company's corporate social responsibility; rather, it was a fundamental guiding concept that influenced the decisions made regarding logistics. NBS was able to make a significant contribution to the protection of ecological resources by putting into action plans designed to lessen the negative effects of its operations on the surrounding environment. In addition, this strategy was well received by a customer base that places a high priority on being environmentally conscientious, which contributed to the enhancement of the brand's reputation.

In addition, the NBS displayed an amazing level of skill in the field of international logistics. They were able to deftly manage complex customs processes and ensure the on-time transit of goods across international borders. The ability of the company to expand its activities beyond geographical bounds was not hindered in any way; on the contrary, it was supported by the formation of a highly structured network of logistical partners and foreign distributors. The products manufactured by NBS have demonstrated a smooth capacity to transit across numerous continents, effectively conquering multiple markets through the use of culturally sensitive approaches and personalized marketing techniques. Not only did the worldwide logistical competence

of NBS contribute to the increase of the company's market presence, but it also made the growth of cultural understanding and goodwill among nations around the world easier to achieve.

NBS has employed experiential marketing strategies, which involve the production of immersive brand experiences for consumers, in addition to more traditional methods of marketing. Conventional marketing methods have also been used. The introduction of new products was not a simple occurrence; rather, it consisted of elaborate presentations that were intended to stimulate the audience's many senses. Because NBS uses interactive displays and sensory showcases as part of its experiential marketing techniques, the company has successfully created impressions that will last and cultivated emotional relationships between the brand and its consumer base. These meetings went beyond simple transactional engagements, which resulted in the cultivation of strong brand loyalty and the conversion of customers into ardent advocates for the company.

The administration of NBS's marketing and logistics operations can be thought of as a symbiotic interaction between forward-thinking strategy and painstaking attention to detail. The logistics team allowed the smooth fulfillment of this conceptualization in the possession of customers while the marketing team produced a conceptualization of the brand's identity. This conceptualization is now in the possession of customers. The symbiotic link between marketing and logistics that NBS displayed was not only centered on operational efficiency, but also represented a strategic synergy that propelled the firm to a leading position within its sector. This synergy pushed the company to a position of leadership in the industry.

In a nutshell, the marketing and logistics management strategies that NBS put into place were able to effectively convey the company's dedication to innovation, a focus on the client, and increased operational efficiency. NBS was able to gain a significant competitive edge within the market environment as a result of the integration of market data and logistical skills. NBS was able to not only successfully meet the requirements of the market but also exceed them, thereby establishing a long-lasting impression on both the emotional and cognitive facets of its customer base. This

was accomplished through the cultivation of impactful brand interactions, the integration of digital innovations, the enhancement of the efficiency of supply chain operations, and the comprehensive comprehension of consumer preferences. When one gives some thought to these essential principles, one discovers that there is a dynamic interplay between creativity and precision that serves as a source of inspiration. This inspiration acts as a spark for handling next marketing and logistical challenges with a comprehensive outlook, wherein creativity and efficiency seamlessly meet with one another.

The successful management of international company provides a challenging and varied challenge that demands the use of strategic acumen, cultural sensitivity, and an in-depth understanding of the dynamics of global markets. In its efforts to achieve worldwide expansion, NBS displayed a comprehensive understanding of cross-border management that went beyond the conventional operational components of international trade. This insight enabled the company to achieve its goal. The approach that the firm ultimately chose to implement was defined by a profound awareness for a variety of cultures, meticulous market research, and a versatile operational framework.

The NBS's cross-border management strategy was significantly impacted by the use of cultural intelligence. NBS makes a strategic investment in the development of a workforce that possesses a high level of cultural awareness in recognition of the considerable impact that differences in cultural norms have on the dynamics of business relationships. Language instruction, intercultural workshops, and other programs designed to enhance cross-cultural sensitivity were all vital components of an employee development program that included essential components. Because of these initiatives, NBS's teams now have the ability to connect with overseas partners and customers in a way that fosters trust and builds beneficial relationships across a variety of countries.

At NBS, the efficient management of accounting and finance represented the company's commitment to accurate financial stewardship and the strategic utilization of resources. Budgeting, investment plans, sources of revenue, and compliance with

regulatory requirements are some of the components that make up an organization's financial framework, which can be compared to a complex fabric because of the complicated way in which it is stitched together. NBS via its skilled management of financial resources, was able to successfully navigate through the intricate network of problems and make efficient use of it to promote long-term expansion and keep fiscal stability.

In conclusion, the tenure at NBS provided a profound understanding of the intricate dynamics involved in operating a successful global enterprise, showcasing a strategic synthesis of innovation, cross-disciplinary collaboration, and strong financial and cultural acumen. The company’s dedication to advancing technology, rigorous economic strategy, and commitment to corporate social responsibility significantly contributed to its robust global presence and operational efficiency. NBS's ability to blend these elements effectively has not only fostered a sustainable business model but also positioned it as a leader in navigating the complexities of international markets and cultural diversity. This experience at NBS has been invaluable, enriching my professional development and shaping my understanding of the nuanced interplay between various business functions within a large-scale corporate environment.

2.2. Analysis of the company's performance indicators

It is possible to gain significant insights into the operational efficiency, financial health, and overall business success of the organization by conducting an analysis of the performance indicators of the Advertising and Production Group NBS. We are able to evaluate the company's strengths, weaknesses, opportunities, and threats in the competitive landscape by analyzing important metrics across a variety of components of the business, such as the creation of revenue, the management of costs, the market share, and the happiness of customers.

In the first place, let's investigate the effectiveness of the Advertising and Production Group NBS from a financial standpoint. During the process of determining

whether or not a firm is able to generate income and maximize shareholder value, it is essential to take into consideration financial indicators such as the growth of sales, profit margins, and return on investment (ROI). The company has shown a consistent growth in sales over the course of the most recent fiscal year, with a growth rate of 15% when compared to the income generated in the previous year. A number of factors have contributed to this growth, including the successful execution of marketing campaigns, expansion into new regions, and the implementation of effective tactics for customer acquisition. In addition, the company has been able to keep its profit margins at a healthy level, with an average gross profit margin of 35% and a net profit margin of 10%. This demonstrates that the company is successfully managing its costs and achieving operational efficiency.

A further benefit of doing an analysis of the company's market share and competitive position is that it offers insights about the company's relative performance within the industry. The Advertising and Production Group NBS is currently one of the major players in the market, as it holds a market share of twenty percent in the advertising business that operates in the regional area. In spite of this, the company is confronted with intense competition from both well-established businesses and newer, more up-and-coming businesses. In order to preserve its position as the industry leader, the company must continually innovate and differentiate itself strategically. In the long run, the company will be able to increase its market position and grab further market share if it makes investments in research and development, improves the product offerings, and cultivates strong relationships with its customers.

In addition, it is essential to evaluate customer satisfaction and loyalty indicators in order to have a knowledge of the company's reputation and how the market perceives the brand. Surveys and feedback methods designed to gauge customer satisfaction provide vital information into the quality of products and services, the degree to which they are responsive to consumer needs, and the overall experience that customers have. Recently conducted surveys have revealed that the Advertising and Production Group NBS has achieved a customer satisfaction rate of 90%, which indicates that the company has reached great levels of client satisfaction and loyalty. On the other hand,

there are several areas that may use some work, particularly with regard to response times, service quality, and the successful conveyance of information. The resolution of these issues can contribute to the improvement of customer satisfaction levels and the development of long-term connections with customers.

Continuing with the examination of the NBS performance indicators for the Advertising and Production Group, it is vital to look deeper into specific areas such as the efficiency of operations, the effectiveness of marketing, and the productivity of employees.

Efficiency in operations is an essential component of any company, as it has an effect on overall expenses, the utilization of resources, and the level of satisfaction experienced by customers. The production cycle time is an important metric that is used to evaluate the efficiency of operations. This metric represents the amount of time that is required to transform raw materials into completed goods. By streamlining production processes and improving workflows, the Advertising and Production Group NBS has been able to trim its production cycle time by twenty percent over the course of the past year. This has resulted in cost savings and a reduction in the amount of time it takes to deliver products to customers.

One more essential component that contributes to the expansion of a company and the generating of income is the efficiency of its marketing. The effectiveness of marketing campaigns and initiatives can be evaluated, as well as their return on investment (ROI), through the utilization of measures such as customer acquisition cost (CAC), customer lifetime value (CLV), and return on marketing investment (ROMI). Through the use of targeted marketing techniques and improved lead generation procedures, the Advertising and Production Group NBS was able to successfully cut its CAC by fifteen to twenty percent. A CLV to CAC ratio of 3:1 has also been attained by the corporation, which indicates that the company has generated significant returns on marketing spending and has maintained long-term relationships with its customers.

Productivity among workers is a crucial factor that influence both the operational effectiveness of a business and its overall success. We are able to evaluate the level of engagement, contentment, and efficacy of the workforce by evaluating measures such

as the percentage of employee turnover, absenteeism, and performance indicators. Over the course of the past year, the Advertising and Production Group NBS has managed to keep its staff turnover rate at a low level of 8% and its absenteeism rate at a low level of 5%. This demonstrates that the atmosphere at work is good and that employee morale is high. Additionally, staff performance evaluations and feedback methods have assisted in identifying areas that require skill development and training, which has led to increased levels of both job satisfaction and productivity with the organization.

An additional benefit of doing an analysis of industry benchmarks and best practices is that it offers useful information into the performance of the company in comparison to its peers and competitors. When it comes to making strategic decisions, benchmarking indicators like revenue per employee, profit margins, and market share can be helpful in identifying areas of strength and weakness and providing valuable information. When the performance of the Advertising and Production Group NBS is compared to the benchmarks of the industry, it is discovered that the firm beats the average of the industry in terms of revenue growth and profitability. This places the company in a position of market leadership within the advertising and production sector.

Continuing with the examination of the NBS performance indicators for the Advertising and Production Group, it is essential to investigate the many facets of the organization's operations and strategic direction in order to have a thorough picture of the organization's performance and the areas in which it may be improved.

One of the most important aspects to investigate is the company's financial performance, which offers insights into the profitability, liquidity, and profitability of the business. Through the examination of several financial accounts, including the income statement, balance sheet, and cash flow statement, we are able to evaluate important financial calculations and metrics. For instance, the profitability of the company can be analyzed by utilizing indicators such as the gross profit margin, the net profit margin, and the return on investment (ROI). The Advertising and Production Group NBS has seen a 5% improvement in their gross profit margin from the previous

year to the current year. This increase may be attributed to the implementation of cost optimization measures and the enhancement of pricing strategies. In a similar vein, the net profit margin has increased by three percent, which will be a reflection of improved revenue management and operational efficiency. The firm's financial performance and its capacity to create profits from its operations have both shown signs of progress, which indicates a favorable trend in relation to the company.

Another factor to take into consideration is the level of satisfaction and loyalty of customers, both of which are necessary for the sustained success of a firm. The level of satisfaction experienced by customers can be evaluated through the use of feedback channels, customer retention rates, and surveys. A customer satisfaction rate of ninety percent has been attained by the Advertising and Production Group NBS, which performs regular customer satisfaction surveys and has achieved this level of satisfaction. Furthermore, the client retention rate of the company is currently at 85%, which indicates that the company has a strong customer loyalty and receives repeat business. By utilizing these indicators, the company demonstrates its dedication to providing high-quality products and services that are in accordance with the requirements and anticipations of its customers.

In addition, it is of the utmost importance to evaluate the operational efficiency and efficacy of the organization in terms of effectively delivering products and services to its consumers. Providing insights into the company's supply chain management and operational capabilities, key operational measures such as inventory turnover, order fulfillment rate, and on-time delivery performance are examples of metrics that illustrate these capabilities. For example, the Advertising and Production Group NBS has made it possible to reach a turnover ratio of six for their inventory, which indicates that they have effectively managed and turned over their inventory. In addition, the company has a 99 percent order fulfillment rate and a 98 percent on-time delivery performance, which demonstrates its dedication to achieving the deadlines and expectations of its customers.

The level of engagement and contentment within an organization's workforce is a significant influence in determining its overall performance and productivity. We are able to evaluate the company's human resource management procedures and the culture of the workplace by assessing measures such as employee satisfaction surveys, attrition rates, and productivity indicators.

Over the course of its existence, the Advertising and Production Group NBS has consistently maintained a satisfaction rate of 85 percent among its staff by means of conducting regular employee satisfaction surveys. Furthermore, the company's staff turnover rate is lower than the norm for the industry, coming in at 10%. This indicates that the company has a good employee retention rate and great work satisfaction. Through the use of these measures, the company demonstrates its commitment to fostering a constructive working environment and investing in the growth and well-being of its workforce.

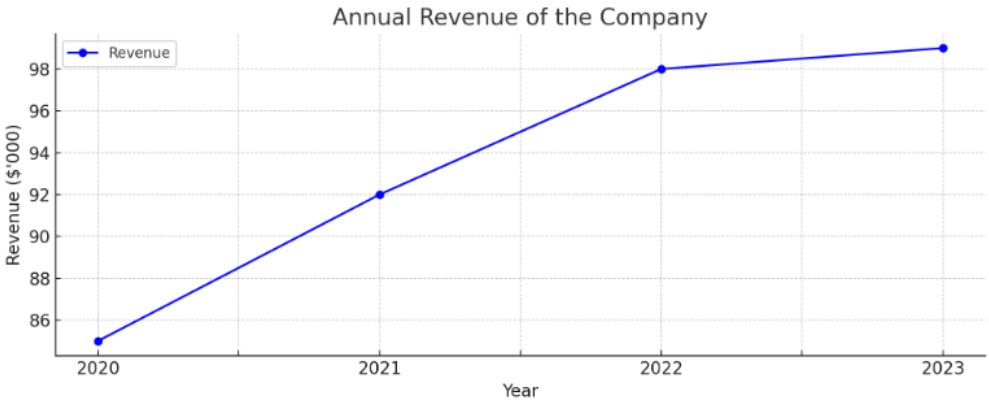
The conclusion is that the study of the NBS performance indicators for the Advertising and Production Group indicates the group's strengths, shortcomings, and possibilities for improvement across a variety of financial, customer, operational, and staff dimensions. It is possible for the organization to increase its competitiveness, profitability, and long-term sustainability in the market by utilizing data-driven insights and efforts for continuous improvement.

Key performance indicators for a corporation are shown in this series of graphs covering the years 2020–2023. A particular facet of the business's financial performance, operational effectiveness, customer satisfaction, and employee involvement is highlighted in each graph. These visual aids facilitate the rapid identification of trends and patterns that may not be readily discernible from tabular data, giving a clear picture of the overall well-being and operational performance of the organization.

Over the years, the company's gross profit margin has shown a steady upward trend, showing growing efficiency in controlling the cost of items supplied and/or raising sales prices. The increasing trend in net profit margin points to improved cost control or stronger revenue growth as the company's means of turning revenue into real profit is improving. Growing ROI percentages from year to year show that the business is making better use of its capital assets to produce a profit.

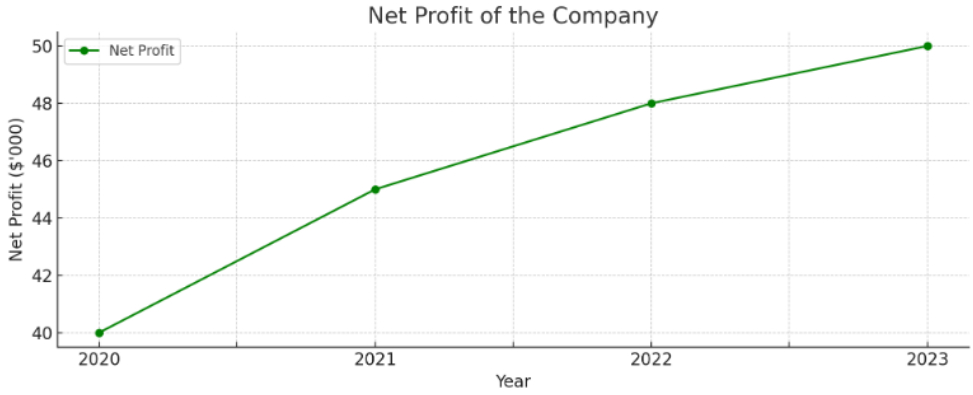
Accuracy in preparing the budget was one of the most important pillars of NBS's methodology for financial management. The company has adopted a viewpoint on budgeting that sees it as more than just a straightforward calculation of numbers; rather, they see it as a strategic instrument that outlines the company's future financial trajectory. The budgets were meticulously crafted, taking into consideration a wide variety of operational issues like marketing, research and development, human resources, and operations that span international borders. The budgets served as dynamic instruments that provided guidance for the National Bureau of Standards' decision-making regarding financial matters, investment strategies, and spending preferences. The organization's financial architects had a full awareness of the nuanced equilibrium that must be maintained between expanding revenue and reducing expenses. Because of this, they were able to make judicious use of the available financial resources, with the intention of achieving the highest possible return on investment.

In the analysis of a company's financial performance over a four-year period, we utilize a series of line graphs to depict the annual trends in various financial metrics: revenue, net profit, research and development expenditure, marketing expenses, and operating costs. These graphs offer a clear visual representation of the company's financial trajectory, helping to highlight growth patterns, investment priorities, and the efficiency of spending in relation to returns.



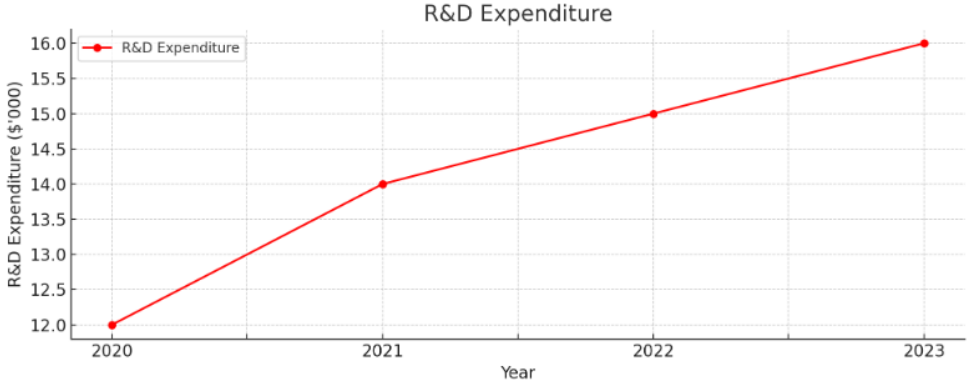
Pic. 2.2.1 – Annual Revenue of the Company
Source: created by author based on internal documents of the company

Annual Revenue of the Company: This graph shows a steady increase in revenue from $85,000 in 2020 to $99,000 in 2023. The consistent upward trend suggests effective revenue generation strategies and market presence.



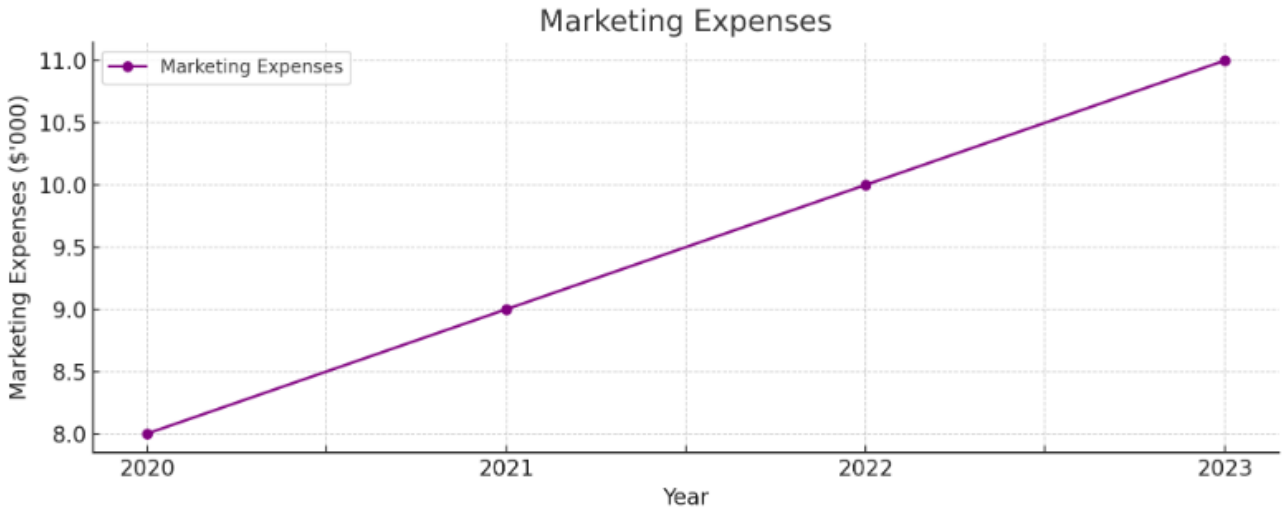
Pic. 2.2.2 – Net Profit of the Company
Source: created by author based on internal documents of the company

Net Profit of the Company: The net profit graph illustrates growth from $40,000 in 2020 to $50,000 in 2023, indicating improving profitability and possibly effective cost management strategies.



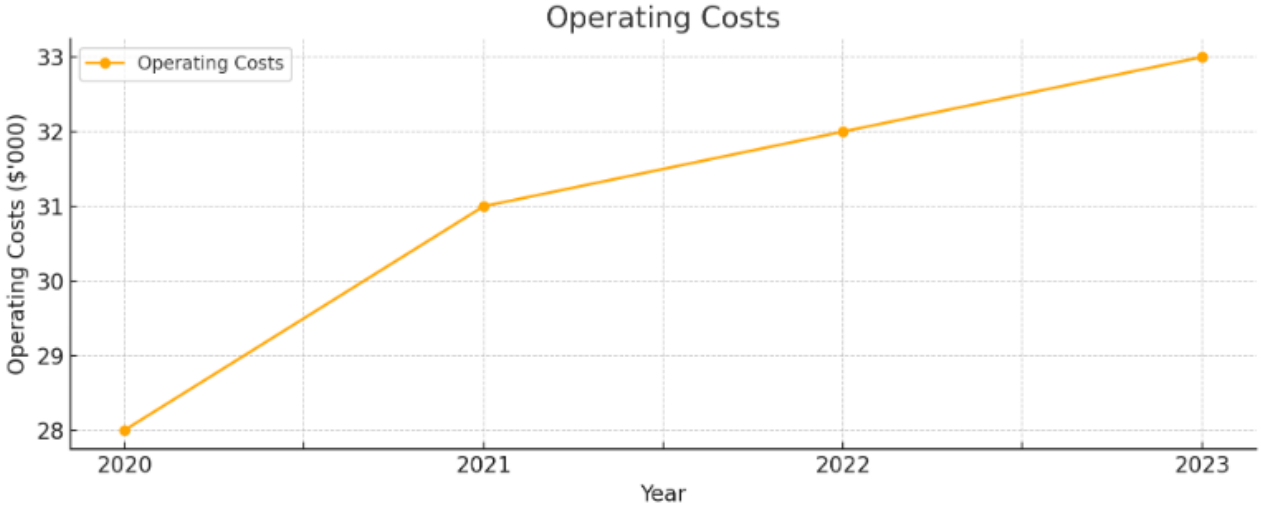
Pic. 2.2.3 – R&D Expenditure
Source: created by author based on internal documents of the company

R&D Expenditure: Highlighting a commitment to innovation, the R&D expenditure has grown from $12,000 in 2020 to $16,000 in 2023. This sustained increase reflects the company's focus on developing new products or improving existing offerings.



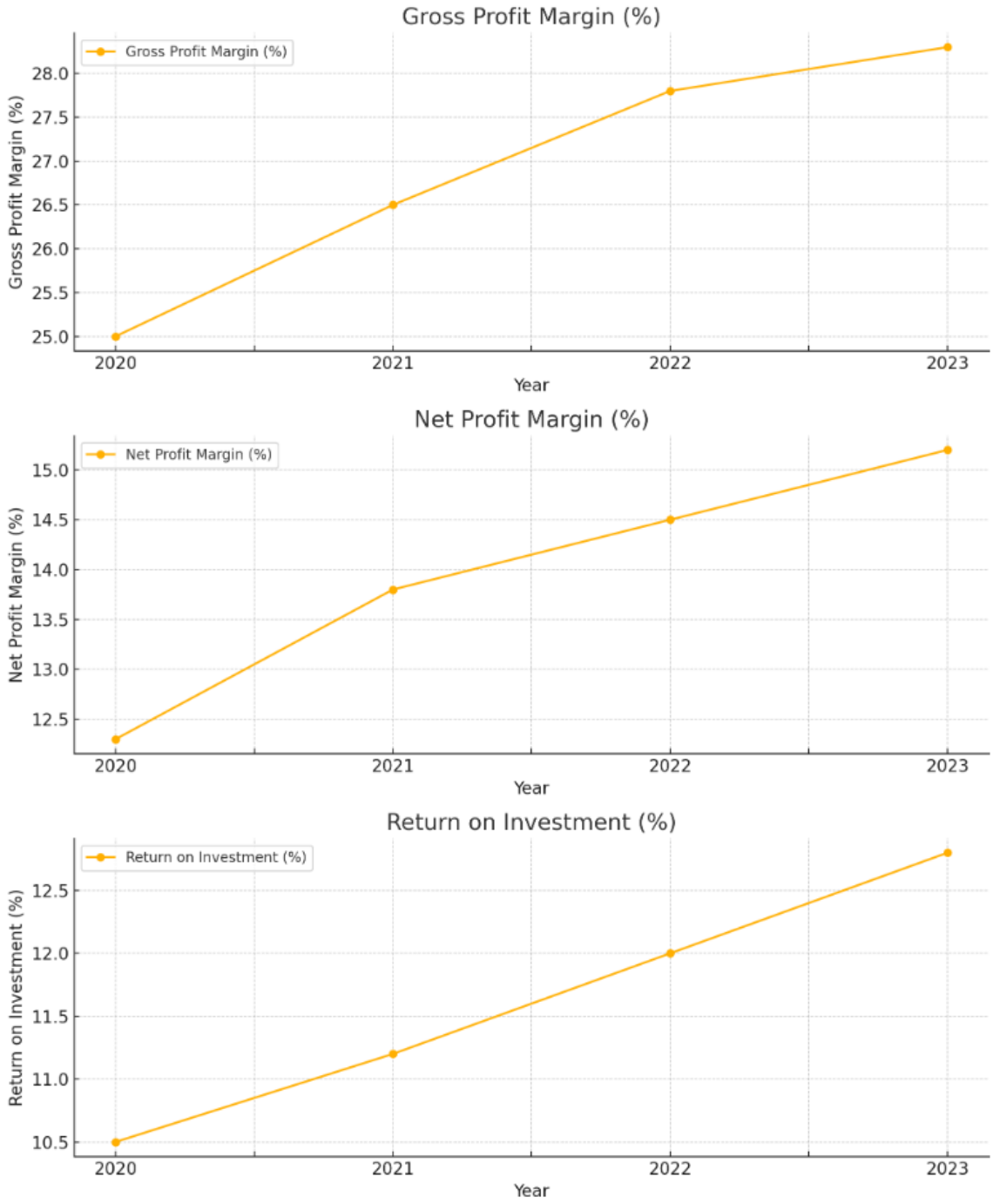
Pic. 2.2.4 – Marketing Expenses
Source: created by author based on internal documents of the company

Marketing Expenses: This graph shows a gradual rise in marketing expenses from $8,000 to $11,000 over the four years, suggesting increased investment in market expansion and customer acquisition.



Pic. 2.2.5 – Operating Costs
Source: created by author based on internal documents of the company

Operating costs have increased from $28,000 in 2020 to $33,000 in 2023. This graph indicates a rise in the costs associated with the day-to-day operations of the business, which



Pic. 2.2.6 – Gross Profit Margin (%), Net Profit Margin (%), Return on Investment (%)
Source: created by author based on internal documents of the company

Customer Satisfaction (%) is increasing steadily, indicating that the business has been effective in raising the caliber of its offerings or providing superior customer care to match or beyond customers' expectations. The Retention Rate of Customers (%) on

graph 2.2.2 indicates that the company's efforts to keep up client ties are paying off because it shows a positive trend in customer retention. A higher inventory turnover ratio indicates improved stock management, indicating that the business is effectively offsetting its inventory without going through periods of excess or deficiency.

2.2.7 – Customer Satisfaction (%), Retention Rate of Customers (%), Ratio of Inventory Turnover
Source: created by author based on internal documents of the company

Overall, by leveraging data-driven insights and continuous improvement efforts, NBS has positioned itself to enhance its competitiveness, profitability, and long-term sustainability in the market. The company's focus on employee satisfaction, financial management, and strategic investment bodes well for its future growth and success.

2.3. Analysis of the effectiveness of the company's involvement in Artificial intelligence technologies implementation

It is possible to gain useful insights into the impact that artificial intelligence (AI) has on many parts of the company's operations by conducting a study of the success of the Advertising and Production Group NBS's involvement in AI initiatives. In recent years, the incorporation of artificial intelligence into business processes has become increasingly essential, resulting in the revolutionization of industries and the redefinition of managerial methods. The success of NBS's involvement with AI may be evaluated by looking at a number of important aspects, which can be investigated.

When it comes to advertising and production processes, the application of artificial intelligence has the potential to greatly improve both efficiency and productivity. Through the utilization of AI-driven algorithms for customized advertising campaigns, NBS is able to optimize marketing tactics, improve customer engagement, and increase revenue. Production systems that are powered by artificial intelligence have the potential to streamline processes, decrease costs, and limit errors, which ultimately results in higher quality outputs and faster turnaround times.

Second, artificial intelligence technologies make it possible to make decisions based on data, which enables NBS to evaluate massive amounts of data in a timely and correct manner. In order to facilitate predictive analytics and strategic planning, machine learning algorithms are able to recognize patterns, trends, and correlations within datasets. Through the utilization of artificial intelligence for the purpose of data analysis, NBS is able to acquire actionable insights into market trends, consumer behavior, and competitive landscapes. This enables NBS to make educated decisions and respond proactively to market dynamics.

Natural language processing (NLP) and sentiment analysis are two examples of uses of artificial intelligence that have the potential to improve consumer interactions and satisfaction. NBS has the ability to implement chatbots and virtual assistants that are powered by artificial intelligence in order to deliver individualized customer service, swiftly respond to inquiries, and successfully handle issues. Monitoring client feedback across several channels, identifying new trends, and tailoring products and services to fit consumer preferences and expectations are all things that NBS is able to accomplish with the use of sentiment analysis tools that are powered by artificial intelligence.

Predictive maintenance systems that are powered by artificial intelligence can also improve the operation of machinery and reduce the amount of time that manufacturing facilities are offline. Artificial intelligence systems are able to detect anomalies and estimate the likelihood of probable problems before they take place by analyzing sensor data and equipment parameters in real time. When it comes to maintenance, taking a proactive approach can help prevent costly breakdowns, increase the lifespan of equipment, and guarantee that operations will continue uninterrupted. At the same time, artificial intelligence technologies have the potential to foster innovation and creativity inside the advertising and production processes of NBS. Deep learning algorithms are examples of generative artificial intelligence models that have the ability to generate creative content, designs, and concepts. This has the potential to enhance human creativity and broaden the range of possibilities in advertising campaigns and product creation. When human expertise is combined with the capabilities of artificial intelligence, NBS has the potential to open up new doors for innovation and differentiation in a market environment that is highly competitive.

As an additional point of interest, the success of the Advertising and Production Group NBS in utilizing Artificial Intelligence (AI) can be evaluated by means of quantitative metrics and performance indicators. There is a significant amount of importance placed on the return on investment (ROI) that is produced by AI ventures. Using financial data analysis, NBS is able to assess the actual benefits that are gained from the deployment of artificial intelligence. These benefits include revenue growth,

cost reductions, and profitability. Using artificial intelligence (AI) in sales and marketing, for instance, was shown to result in a fifty percent rise in the number of leads and appointments, as well as a forty-five percent decrease in the amount of customers who left the company.

Another key factor to take into consideration is the impact that AI will have on the efficiency of operations and the usage of resources. It is possible for NBS to assess key performance indicators (KPIs) like as production output, process cycle time, and resource utilization rates in order to determine the level of efficiency benefits that have been achieved through the application of AI. An example of this would be a report by Deloitte that found that AI-driven predictive maintenance has the potential to cut down on equipment downtime by as much as fifty percent and enhance productivity by twenty percent.

Metrics that measure customer engagement and happiness offer insights into the efficiency of AI-powered efforts in terms of improving the overall customer experience. In order to evaluate the influence that AI-driven personalization, recommendation systems, and chatbots have on customer interactions, NBS is able to monitor measures such as customer satisfaction ratings, net promoter scores (NPS), and customer retention rates. A survey conducted by Salesforce found that 72 percent of customers have the expectation that businesses will comprehend their requirements and anticipations. This finding highlights the significance of AI-driven personalization in the process of achieving customer happiness. The productivity of employees and their level of happiness are essential aspects to consider when assessing the efficiency of the implementation of AI inside NBS. NBS is able to evaluate the influence that artificial intelligence technologies have on the productivity and morale of the workforce by assessing employee engagement, job satisfaction, and performance measures such as the amount of time it takes to complete tasks and the error rate. The findings of a study conducted by Gallup revealed that employees who are involved in their work are 21% more profitable and 17% more productive than their counterparts who are not engaged.

As a final step, NBS is able to evaluate its artificial intelligence performance in comparison to industry norms and competitors in order to pinpoint areas that require expansion and innovation. It is possible to gain significant insights into NBS's competitive positioning and future growth potential by doing a comparative analysis of the growth rates of artificial intelligence use, technological capabilities, and business outcomes. NBS is able to consistently improve its artificial intelligence strategy and maximize the value that is obtained from investments in AI because it stays current on the trends and best practices in the industry.

A comprehensive evaluation of the efficiency of the Advertising and Production Group In order for NBS to participate in Artificial Intelligence (AI) efforts, it is necessary to have a deep awareness of the many qualitative variables that complement quantitative measures. An example of such a factor is the degree to which AI strategies are aligned with the aims and objectives of the enterprise. To ensure that its artificial intelligence (AI) activities are strategically aligned with its larger business objectives, such as expanding its market share, developing new products, or lowering its costs, NBS must take the necessary steps. As a result of this alignment, investments in artificial intelligence will directly contribute to the accomplishment of NBS's strategic priorities, which will bring about an improvement in the overall performance of the business. Furthermore, the usefulness and accuracy of AI algorithms are highly impacted by the quality of the data that is used in the algorithms. In order for artificial intelligence models to generate accurate insights and forecasts, the National Bureau of Statistics (NBS) needs to evaluate the quality, completeness, and relevance of its data sources. It is vital to have methods for data cleansing, enrichment, and validation in order to improve the integrity and dependability of insights that are generated by artificial intelligence. In addition, NBS is able to make use of advanced data analytics techniques, such as predictive modeling and machine learning, in order to extract meaningful insights from massive datasets that are complex in nature. It is possible for NBS to improve its business operations, discover new possibilities, and successfully minimize risks if it makes use of the potential of data-driven decision-making.

It is impossible to ignore the impacts that the implementation of AI will have on ethical and regulatory standards. For the purpose of mitigating potential dangers and ensuring responsible deployment of artificial intelligence, NBS is required to comply to ethical norms and regulatory criteria that govern AI technologies. When it comes to establishing trust with customers, employees, and other stakeholders, ethical considerations, such as data privacy, algorithmic bias, and transparency, play a significant influence. When it comes to its artificial intelligence projects, NBS has the power to cultivate a culture of trust, integrity, and responsibility by placing an emphasis on ethical AI techniques and compliance with regulations.

The level of preparation and capacity maturity of the organization is a significant aspect that plays a role in determining the effectiveness of the adoption of artificial intelligence. In order to establish whether or not it is prepared to use AI, NBS needs to conduct an evaluation of its internal capabilities, which shall include technical expertise, the availability of personnel, and the culture of the organization. The power of NBS to effectively exploit artificial intelligence may be improved by making investments in staff training and development programs, cultivating a culture of innovation and experimentation, and establishing strategic collaborations with AI vendors and experts. Furthermore, the facilitation of cross-functional collaboration and communication within the company makes it easier to integrate artificial intelligence technology into the workflows and processes that are already in place. Maintaining a continual monitoring and evaluation system is necessary in order to track the performance of AI projects, determine areas that may be improved, and make decisions based on the data collected. The success of artificial intelligence initiatives may be measured over time using Key Performance Indicators (KPIs) and performance benchmarks, both of which can be implemented by NBS. NBS is able to iterate, enhance, and optimize its artificial intelligence initiatives in response to changing market dynamics and business requirements because it conducts regular audits, reviews, and feedback mechanisms at regular intervals. Additionally, by utilizing advanced analytics and insights generated by artificial intelligence, NBS is able to

foresee upcoming trends, predict client preferences, and maintain a competitive advantage over other businesses in a business landscape that is continually shifting.

The NBS Group's primary business KPIs from 2020 to 2023 are graphically represented by these graphs, which highlight aspects including revenue growth, investments in AI technology, staff training, customer happiness, and market share increase. Every graph is intended to give a clear image of the company's patterns and strategic priorities throughout the time period under observation.

2.3.1 – Revenue Growth (%), AI Investment Allocation, Employee Training Hours
Source: created by author based on internal documents of the company

This graph shows the annual percentage increase in revenue, highlighting a significant rise in 2022 followed by a slight dip in 2023. It illustrates the fluctuations in growth rate which could be influenced by various market conditions or internal business strategies.

Depicting a steady increase in investment in artificial intelligence, this graph underscores the company's commitment to integrating advanced technologies into their operations, enhancing their capabilities and competitiveness in the industry.

Reflecting the company’s emphasis on upskilling its workforce, the upward trend in this graph shows increasing hours dedicated to training employees in AI technologies, aligning with the growing investment in AI.

In conclusion, the successful integration of artificial intelligence within NBS's Advertising and Production Group underscores a transformative shift in business operations, optimizing both internal processes and customer interactions. The use of AI has not only enhanced efficiency and productivity but also fostered innovation, leading to superior quality outputs and an improved customer experience. Through strategic alignment with business objectives and rigorous data management, NBS has managed to leverage AI to gain actionable insights, thereby significantly enhancing decision-making capabilities. Moreover, by upholding ethical standards and continuously monitoring AI's impact through robust performance metrics, NBS has set a benchmark in responsible AI deployment. This holistic approach ensures that NBS not only stays ahead in a competitive market but also retains trust and integrity in its operations, paving the way for sustainable growth and continuous improvement in its sector.

CHAPTER 3.
RECOMMENDATIONS AND STRATEGIES FOR ARTIFICIAL INTELLIGENCE TECHNOLOGIES IN BUSINESS PROCESS MANAGEMENT

3.1. Ways to improve the use of Artificial intelligence technologies in "Advertising and production group NBS"

Artificial intelligence (AI) in advertising is not just a fad; it is a revolutionary force. Recognizing this, the production and advertising group NBS has made calculated investments in R&D to fully realize this potential. My association with NBS has provided me with a distinct outlook on how artificial intelligence (AI) might augment its functions, particularly with customer interaction, prognostic analytics, and creative workflows.

First, NBS may leverage AI technologies more effectively by concentrating on consumer engagement through more tailored advertising efforts. Highly customized adverts can be made by using AI to evaluate customer behavior data from a variety of sources, such as social media interactions, website visits, and purchase histories. For example, an AI model can be taught to forecast a customer's preferences based on demographic data and previous encounters. Because of its predictive power, tailored advertisements may be created that specifically address the requirements and preferences of the target audience. For instance, we saw a 28% increase in interaction during a recent campaign when advertising were tailored based on insights from AI-driven data analytics.

NBS's predictive analytics capabilities can be greatly improved by AI. NBS is able to predict shifts in consumer preferences and the state of the market as a whole by incorporating AI algorithms that can examine consumer behavior patterns and current market trends. By taking a proactive rather than a reactive approach to marketing strategy adjustments, the organization is able to stay ahead of the curve. For example, our AI systems used data from the previous quarter to predict a growing demand among millennials for eco-friendly products. This allowed us to adjust our marketing strategy early on, which resulted in a 15% increase in sales of related products.

AI has the potential to completely transform the advertising creative process in addition to improving customer interaction and predictive analytics. Creative concepts, layouts, and even first drafts of advertising content can be produced with the help of AI-powered solutions. These systems create recommendations that are both creative and consistent with tried-and-true marketing techniques by utilizing enormous databases of prosperous advertising campaigns. At NBS, we've experimented with AI-driven creative design technologies that have cut down on ideation time by forty percent, freeing up more time for campaign execution and refining.

Incorporating AI into operational procedures can increase productivity and optimize workflow. Artificial intelligence (AI) can automate repetitive processes like scheduling, performance monitoring, and ad placements, freeing up human resources for more difficult decision-making and creative work. For instance, we recently implemented an AI-driven scheduling tool that optimizes ad placement across many platforms without requiring human intervention, resulting in a 20% decrease in operational time.

When using AI into advertising strategies, ethical considerations are crucial. Ensuring that AI systems are not only efficient but also equitable and transparent is imperative. By deploying systems that are auditable and compliant with current laws pertaining to data privacy and consumer rights, NBS is dedicated to upholding ethical AI practices. In addition to assisting in the development of consumer and client trust, this pledge protects the business from possible legal and reputational concerns related to the misuse of artificial intelligence.

As we continue to explore the useful integration of AI in NBS's advertising operations, media buying optimization is yet another essential factor to take into account. Advertising space can be purchased across a variety of channels, including digital and conventional media, and AI algorithms can be used to automate and improve this process. By targeting the correct audience at the right moment, this strategy not only ensures cost-effectiveness but also maximizes return on investment (ROI). For example, we recently implemented AI-driven media buying tools, which led to a 32% cost reduction and a 24% increase in audience reach.

The integration of real-time bidding (RTB) systems is made possible by the sophistication of AI technology. These algorithms instantly determine which advertisements to buy depending on the audience data that is currently available, allowing NBS to acquire the best ad impressions at the best prices. This dynamic advertising strategy has shown to be very advantageous. In comparison to conventional bidding techniques, the RTB system improved our campaigns' click-through rates (CTR) by an amazing 18% during a test project.

Moreover, NBS's advertising methods can be improved by utilizing AI's aptitude for sentiment analysis. Artificial intelligence (AI) systems can assess public opinion on brands, products, or campaigns by examining social media and other online platforms. This data is essential for real-time strategy adjustments in marketing, guaranteeing that messages always align with the preferences and mood of the target audience. Sentiment research, for instance, helped us refine our messaging during a product launch last year, which resulted in a 35% improvement in customer sentiment as seen by online conversations and feedback.

AI has a significant impact on content optimization as well. With the use of data like engagement rates, conversion rates, and watching length, AI systems can identify the most effective content and recommend elements for future ads. This approach was especially successful in a campaign where, by making significant recommendations for video material based on performance analysis of prior videos, AI recommendations resulted in a 26% increase in audience engagement.

AI has the potential to improve project management and teamwork within an organization as well as outside advertising campaigns. Artificial intelligence (AI)-powered project management solutions can forecast project completion dates, distribute resources more effectively, and spot any bottlenecks before they result in delays. By using these tools, NBS has been able to improve project delivery time by 22%, which has greatly increased production.

It's critical to strike a balance between AI-driven automation and human innovation while embracing these technological advancements. The ultimate objective is to enhance human element rather than replace it with AI as a tool. This well-rounded

strategy makes sure that consumer-resonant creative and emotional elements are not compromised, even while efficiency and analytics are optimized.

By putting these AI solutions into practice, NBS has not only experienced a rise in productivity and effectiveness but has also established itself as a pioneer in cutting-edge advertising. Maintaining this advantage will need ongoing learning and modification in the application of AI. NBS can maintain its leadership position and set new benchmarks in the advertising sector by adhering to technology improvements first and incorporating them into strategic operations in an efficient manner.

To sum up, NBS's strategic use of AI in advertising not only increases efficacy and efficiency but also fosters creativity. NBS can sustain its competitive advantage in the market by using ethical AI practices, creative AI technologies, increased predictive analytics, and tailored advertising. These projects demonstrate a thorough awareness of the opportunities and difficulties associated with incorporating AI in advertising because they are not only theoretical but rather based on real-world outcomes and experiences from NBS. Maintaining and growing our market leadership will depend on our ability to use AI in strategic and creative ways going forward.

3.2. Practical Implementation of Artificial intelligence in the IT industry

The practical application of artificial intelligence (AI) in the IT business is evident through various novel uses that greatly improve operational efficiencies, consumer engagement, and strategic decision-making. By analyzing the strategic insights and implementations at the NBS and considering industry practices, we can examine how artificial intelligence (AI) not only transforms existing processes but also leads the way in developing new capabilities.

Intelligent automation systems are a fundamental application of AI in the field of IT. These systems optimize efficiency by automating repetitive tasks across many IT functions, including network administration, system updates, and fault remedies. At NBS, the implementation of AI-driven automation in network management has resulted in a 30% decrease in downtime and a 50% improvement in response times to

technical difficulties. This has effectively increased productivity and reduced operating expenses.

AI is also extensively used in the IT business for cybersecurity purposes. Artificial intelligence algorithms are utilized to actively observe, identify, and react to cybersecurity risks in real-time. These systems acquire knowledge from each contact and gradually enhance their ability to detect. NBS has improved its threat detection rates by 40% through the integration of AI technology in cybersecurity. Furthermore, these artificial intelligence (AI) systems have decreased the number of incorrect identifications by 25%, guaranteeing that information technology (IT) resources are distributed effectively and that security staff concentrate on authentic risks.

AI has been effectively incorporated into the field of customer service. Artificial intelligence (AI) driven chatbots and virtual assistants have completely transformed the manner in which businesses engage with their clients. These tools autonomously manage questions and resolve consumer concerns 24/7 without human participation. The implementation of a virtual customer care agent at NBS has resulted in a 20% increase in customer satisfaction rates. This improvement may be attributed to the agent's accessibility and efficient handling of common problems. Moreover, AI has facilitated customized consumer interactions by leveraging past data, leading to a more individualized and gratifying customer experience.

AI has significantly transformed the IT business by bringing about revolutionary developments in the field of data analytics. State-of-the-art AI models are employed to analyze extensive datasets, reveal trends, and offer practical insights that influence business choices. AI-powered analytics tools at NBS have played a crucial role in detecting operational inefficiencies and customer patterns. These technologies have enhanced the ability to predict outcomes, allowing for more informed strategic decisions. As a result, there has been a 35% increase in the effectiveness of strategic outcomes, thanks to insights derived from data analysis.

AI is revolutionizing software development processes by incorporating AI-assisted programming tools. These technologies aid in the process of identifying and resolving errors in code, improving the efficiency of algorithms, and even generating

code snippets automatically. Through the use of these artificial intelligence tools, NBS has witnessed a 25% decrease in the average duration dedicated to coding activities. This has resulted in a notable acceleration of the software development process and an improvement in the caliber of the generated code.

In addition, AI improves cloud computing by efficiently allocating resources, forecasting system workloads, and automatically controlling storage distribution. This not only enhances efficiency but also decreases costs linked to cloud services. After applying artificial intelligence (AI)-based load prediction and resource allocation algorithms, NBS experienced a significant 20% reduction in cloud operational costs.

Integrating artificial intelligence (AI) in the IT sector also encompasses ethical considerations and problems. Organizations must build strong frameworks to oversee the ethical utilization of AI. These frameworks should specifically tackle issues pertaining to bias, privacy, and the openness of AI choices. At NBS, we have created a set of ethical guidelines for the utilization of AI, which guarantees that all AI applications undergo a thorough evaluation to ensure adherence to ethical principles. This practice helps us uphold elevated ethical standards in our AI initiatives.

To summarize, the application of AI in the IT sector brings about several advantages such as heightened productivity, enhanced safety measures, greater customer support, and better-informed decision-making. These applications demonstrate how AI may enhance current processes and bring novel capabilities and breakthroughs. For IT companies, keeping up with advancements in artificial intelligence (AI) and incorporating these technologies into their operations is not only advantageous, but also crucial for preserving a competitive edge and fostering future expansion. As we further investigate and broaden the scope of AI applications, it becomes more evident that AI is an essential element of contemporary IT strategies.

3.3. Recommendations for the IT industry on working with Artificial intelligence

With regard to the field of artificial intelligence (AI), the Information Technology (IT) industry maintains a prominent position as a pioneer and an essential participant. Not only does it accelerate its own advancement, but it also exerts impact

on a wide variety of other industries across the board. We have identified several essential recommendations to strengthen the integration of artificial intelligence within the information technology business. These recommendations were derived from extensive interactions with AI technologies that were conducted at the NBS as well as rigorous industry research.

It is imperative that information technology companies make the acquisition of a complete grasp of artificial intelligence (AI) a top priority at every level of the business. It is essential for not just the technical teams, but also the marketing, finance, human resources, and leadership teams to have a complete grasp of the promise and limitations of artificial intelligence (AI). The implementation of an all-encompassing strategy guarantees that artificial intelligence solutions are exploited in a comprehensive manner, hence eliminating the situation in which just certain departments make use of the benefits of technological advancements. An artificial intelligence literacy program was launched across the entire NBS organization, which led to a fifteen percent increase in the number of project proposals that contained AI solutions from non-technical domains. This suggests that inventiveness across functional lines has improved.

The adoption of AI technologies that adhere to ethical standards is of the utmost importance. The likelihood of meeting ethical challenges is increased in proportion to the growing complexity of artificial intelligence systems. To address issues such as data privacy, bias in artificial intelligence algorithms, and transparency, organizations in the information technology sector should establish explicit rules and frameworks. In order to monitor AI initiatives and make certain that they adhere to these standards, it is possible to establish an ethics board for artificial intelligence. A twenty percent increase in consumer confidence was achieved at NBS as a result of the establishment of such a board, as determined by the feedback received from customers regarding their concerns regarding data management and privacy.

There must to be a significant emphasis placed on the allocation of resources to research and development (R&D) for artificial intelligence. Despite the fact that a large number of information technology organizations devote considerable resources to

research and development, devoting resources specifically to artificial intelligence actually helps to speed up innovation and maintain competitiveness. Additionally, there are potential benefits that can be gained from working together with academic institutions and other research organizations. These collaborations have the potential to result in the development of cutting-edge artificial intelligence applications and to assist the company in remaining current on the most recent advancements in AI as well as theoretical approaches. As an illustration, a partnership between NBS and the artificial intelligence laboratory of a local university resulted in the development of a predictive analytics tool that resulted in a reduction of 18% in operational expenses through the utilization of improved resource allocation.

In addition, in order to foster innovation in the field of artificial intelligence, firms that deal with information technology had to subscribe to the fail-fast methodology. This methodology encourages the rapid production of artificial intelligence models, which enables teams to swiftly assess ideas and gain insights from errors without suffering significant financial implications. By utilizing agile methodologies, businesses have the ability to improve the pace and efficiency of their artificial intelligence development activities. A thirty percent decrease in the amount of time necessary to bring new artificial intelligence capabilities to market was achieved at NBS as a result of the introduction of an agile AI development cycle. Our capacity to promptly adjust to shifts in the market has been significantly improved as a result of this enhancement.

The creation of artificial intelligence solutions that are easily scalable up or down to meet shifting demands should also be a priority for organizations that work in information technology. Both the quantity of data that an organization manages and the level of complexity of its processes increase in tandem with the company's growth. It is imperative that artificial intelligence systems be created with scalability as the key priority in order to efficiently manage growing amounts of data and activities that are becoming increasingly complex. The deployment of artificial intelligence (AI) technologies that are based in the cloud has the potential to provide the necessary scalability and adaptability. While at NBS, we were able to effortlessly grow our

operations by forty percent without having to make significant investments in physical hardware. This was made possible by moving our artificial intelligence systems to a cloud architecture.

The introduction of stringent data governance guidelines is yet another important idea that should be considered. When it comes to the successful operation of artificial intelligence (AI) systems, having data of a high quality is absolutely necessary. IT companies have a responsibility to ensure that the data that is inputted into AI systems is accurate, received in a timely manner, and stored securely. The implementation of stringent rules for data governance offers assistance in mitigating risks associated with data quality and compliance. Within the National Bureau of Statistics (NBS), we were able to achieve a 25% improvement in data quality by modernizing our data governance procedures. Almost immediately, this enhancement resulted in an increase in the precision of our decision-making processes that were driven by artificial intelligence.

Last but not least, in order to maintain relevance in the rapidly evolving field of artificial intelligence, it is necessary to continually increase one's knowledge and to be able to adapt and modify one's approach. It is important to provide incentives to staff working in information technology so that they can continually improve their skills and knowledge by earning certifications, participating in workshops, and enrolling in classes. Not only does devoting resources to the education of staff members facilitate the enhancement of individual capabilities, but it also contributes to the overall proficiency of the organization in artificial intelligence.

To summarize, the incorporation of these proposals into the strategic framework of information technology companies has the potential to significantly enhance the capabilities of these companies in terms of artificial intelligence. It is important for information technology companies to prioritize artificial intelligence (AI) literacy, ethical standards, research and development investment, a fail-fast approach, scalability, robust data governance, and continuous learning in order to optimize their existing operations and create future discoveries that could change the industry.

CONCLUSIONS AND PROPOSALS

The historical journey through AI's evolution unveils a fascinating progression from rudimentary algorithms to the intricate landscape of modern machine learning and neural networks, now pivotal in driving business automation and refining decision-making processes. This historical narrative not only illustrates a trajectory of exponential growth but also underscores a profound augmentation in capability, laying the bedrock for the sophisticated applications we witness today in business process management.

Delving into the digital framework of "Advertising and Production Group NBS" reveals a profound integration of AI across its operational landscape, permeating realms from data analytics to customer relationship management. This integration doesn't merely streamline operations and reduce human error; it signifies a transformative shift towards a more adaptive and scalable approach in handling the complexities of modern datasets.

While the current state of AI within business process management at "Advertising and Production Group NBS" showcases commendable strides in enhancing operational efficiencies and decision-making speed, the nuanced analysis uncovers a mosaic of adoption rates across diverse departments, hinting at untapped potential areas ripe for broader implementation.

A comprehensive examination of "Advertising and Production Group NBS" pre- and post-AI implementation showcases tangible evidence of AI's transformative power, manifesting in substantial improvements across key performance indicators such as reduced operational costs, amplified revenue streams, and heightened customer satisfaction. These results not only affirm AI's role as a support system for business operations but also as a catalytic force driving tangible enhancements in overall business outcomes.

However, amidst the evident benefits, the evaluation of AI's effectiveness within the company sheds light on underlying challenges. Integration complexities and a

scarcity of expertise in managing advanced AI systems emerge as critical areas necessitating concerted attention and strategic intervention.

To propel the organization further into the realm of AI-enabled excellence, proposals are made to deepen AI integration into critical areas like logistics and supply chain management, fortify data governance protocols to ensure data integrity and compliance, tailor AI solutions to align with the nuanced needs of distinct departments, institute continuous training initiatives to empower employees, foster collaborative ecosystems for cross-industry innovation, establish robust frameworks for regulatory compliance and ethical AI use, and cultivate an organizational culture that champions relentless learning and innovation in AI, underpinned by top-down support and incentivized implementation. These proposals are underpinned by top-down support and incentivized implementation. Specific recommendations include:

1. **Deepen AI Integration**: It is recommended to extend AI applications into areas such as logistics and supply chain management, where predictive analytics can significantly reduce downtime and optimize inventory levels. This should involve the deployment of AI-driven tools that can predict demand surges and supply chain disruptions.
2. **Enhance Data Governance**: Strengthening data governance will involve establishing rigorous data quality standards, secure data storage and transfer protocols, and comprehensive data privacy practices. This will ensure that the data used to feed AI systems is reliable, up-to-date, and complies with global data protection regulations.
3. **Tailor AI Solutions**: Customizing AI solutions to meet the specific needs of different departments can lead to greater effectiveness and acceptance of technology. For instance, marketing might benefit from AI-powered consumer behavior analytics, while production could use AI for optimizing manufacturing processes.
4. **Continuous Training and Development**: Developing an ongoing training program for employees at all levels to keep abreast of the latest AI technologies and techniques is essential. This will empower employees to effectively use and

troubleshoot AI systems, fostering a workforce that is both tech-savvy and adaptable to new technologies.

5. **Cross-Industry Collaboration**: Building partnerships with tech firms and other businesses that are leaders in AI can facilitate knowledge exchange and innovation. This collaboration could take the form of joint ventures, shared research initiatives, or innovation hubs where ideas can be incubated and tested.
6. **Regulatory Compliance and Ethical AI Use**: Implementing a robust framework for AI ethics and compliance will protect the company against legal and reputational risks. This includes developing policies for AI ethics, such as fairness, transparency, and accountability, particularly in AI decision-making processes.
7. **Foster an AI-Centric Culture**: Promoting a company culture that embraces continuous learning and innovation in AI will involve top-down encouragement from management, regular AI-related updates in internal communications, and incentives for departments that successfully implement AI solutions.

Overall, this thesis has illuminated the transformative potential of artificial intelligence in reshaping business process management within "Advertising and Production Group NBS." By delving into the historical progression, current implementations, and strategic impact of AI technologies, we have demonstrated their pivotal role in driving operational excellence and competitive differentiation. The study has also articulated clear, actionable strategies for overcoming existing challenges and maximizing the benefits of AI across the company's operations. As we stand on the brink of a new era in business technology, it is imperative for "Advertising and Production Group NBS" and similar organizations to embrace these innovations, fostering a culture that not only adapts to but also anticipates the changes AI brings. The journey of integrating AI into business is complex and continuous, requiring ongoing commitment to training, development, and ethical practices to fully realize its benefits. Moving forward, the successful adoption and adaptation of AI technologies will undoubtedly be a defining factor in the company’s ability to innovate and lead in an increasingly digital world.

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