



Master's thesis

Ezinne Chukwu Process Management

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Faculty of Business Economics Master of Management

Evaluation of modern tools for business process modelers

Thesis presented in fulfillment of the requirements for the degree of Master of Management, specialization Business

dr. Gerhardus VAN HULZEN



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Preface

This research explores the dynamic landscape of business process management (BPM) tools, especially focusing on the role and influence of modern conversational interfaces such as ChatGPT in conversational process modeling (CPM) and BPM processes. The primary question of the study is: "To what degree do modern tools, especially ChatGPT, effectively contribute to conversational process modeling in business process management (BPM) tools?" Ten in-depth interviews and 45 surveys were conducted with BPM professionals from various sectors. Case studies published on the role of ChatGPT in different industries were also reviewed. Through this, the research aimed to acquire insights into the perceptions of participants on the evolving role of ChatGPT in CPM and the BPM context and sought recommendations for organizations considering ChatGPT integration into their BPM processes. The study's findings revealed various benefits such as enhanced customer interactions and streamlined decision-making. Also, some challenges regarding ChatGPT's integration were uncovered. They include technical hurdles, integration complexities, organizational adaptation, and customization complexities. In addition, the results of the research reveal a shared anticipation of the pivotal role of ChatGPT in the BPM's future. Participants foresaw its evolution not merely as a process optimization tool but as a significant decision-support mechanism. Common themes that emerged include a balanced hybrid approach entailing human oversight, continuous learning for adaptability, and the significance of seamless integration. In conclusion, the findings obtained in this research underline the importance of establishing scalable infrastructure, involving end-users in early implementation stages, and training employees. As organizations navigate the BPM tool adoption challenges, the study's findings provide actionable recommendations for sustainable and successful incorporation of ChatGPT in BPM frameworks.

Keywords: Business process management, Conversational process modeling, ChatGPT, sustainable, integration, incorporation, BPM professionals, hybrid approach

Executive Summary

This research explores the dynamic landscape of business process management (BPM) tools, especially focusing on the role and influence of modern conversational interfaces such as ChatGPT in conversational process modeling (CPM) and BPM processes. Even though past studies recognize the significance of BPM in organizations, there is still a gap regarding how emerging tools like ChatGPT contribute to the conversational aspect of the process modeling and the business value it generates (Ayinde et al., 2023; Raj et al., 2023). The primary question of the study is: "To what degree do modern tools, especially ChatGPT, effectively contribute to conversational process modeling in business process management (BPM) tools?"

. Qualitative data collection procedures consisted of virtual interviews conducted using a video conferencing tool and analysis of published case studies focusing on ChatGPT use in business processes, while quantitative data collection procedures consisted online surveys disseminated through targeted emails, professional networks, and industry-specific forums. Purposive sampling was used for interviews to ensure diverse and knowledgeable participants, while convenience sampling was utilized for surveys due to its accessibility and practicality in reaching a wide range of professionals. Criterion sampling was leveraged for case studies to determine and settle on cases as per a predefined criterion appropriate and specific to the research objectives. The research strategy followed a sequential explanatory methodological approach, commencing with a quantitative phase to determine broad trends, followed by a qualitative phase to explore contextual nuances and intricacies. Quantitative data from online surveys were subjected to statistical analysis, with the help of SPSS tool while thematic analysis was leveraged to analyze qualitative data and finally, triangulation was leveraged to integrate the findings and make conclusions.

The findings of this study shed light on the benefits, challenges, and strategies associated with implementing ChatGPT in business process management (BPM) and conversational process modeling (CPM). The quantitative results, as demonstrated in Table 1, indicate a significant prevalence of ChatGPT adoption among the surveyed participants, with 70% of respondents reporting their organizations currently utilize ChatGPT in their BPM tools; the most notable benefits reported were improved process efficiency (85%), enhanced decision-making (78%), and better customer interactions (70%). However, challenges such as employee training and adaptation (55%), integration complexity (60%), and data privacy concerns (45%) were also identified.

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List of Abbreviation

- CPM: conversational process modelling BPM: Business Process modelling DMS: Database management systems.
- NLP: Natural language processing
- VCA: virtual customer assistant VCA
- BPA: Business process automation BPA
- UX: User Experience
- AI: artificial intelligence
- PM: process modelling
- BPM: Business Process Model and Notation
- KPI: key performance indicators
- HIPAA: Health Insurance Portability and Accountability Act
- ERP: Enterprise resources planning
- CRM: Customer relationship management

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1 CHAPTER ONE: INTRODUCTION

1.1 Introduction

This chapter provides background information on the research. It offers an overview of business process modeling (BPM), the evolution of BPM tools, challenges faced during the implementation of BPM, conversation process modeling (CPM) emergence, the significance of tool evaluation, the importance of chatbots in business processes, and business value generation with BPM tools. It also entails research scope, objective, and question.

1.2 Background Information of the Research

The effective design and execution of business processes have become increasingly significant to modern business firms. For decades, researchers have recognized the need for an organization to continuously redesign its process of business regularly, as a way of aligning its operational practices with the varying requirements of businesses. Aldin and de Cesare (2011) understand that it is important for the changes in business processes to be understood and represented systematically, defining their impact. Reaching this understanding, business process models will need to be created to represent future or current desired organizational behavior in attaining several purposes, such as the monitoring and control of process execution. This led to the introduction of business process modeling (BPM) which entails a collection of tools, techniques, and methods to support the analysis, management, design, and execution of operational business processes (Augare & Zimányi, 2012, p. 29). BPM is built on systems of classical workflow management (WFM), its roots can be found in office information systems, which utilized net variants to model and design office procedures (Reijers, H. A. 2003).

In addition, unlike traditional software design, which is data-driven, business process management systems (BPMS) follow current software development trends which include moving the attention from data to processes and assembling complex systems of software other than coding from scratch. It can support the shift to assembling from programming and the ideologies of process redesign and orientation (Augare & Zimányi, 2012, p. 29). For instance, in today's world, management systems of workflow can be utilized to combine existing applications and support process change by changing the diagram of workflow. In other words, BPMs can be described as generic software systems controlled by process design, utilized to monitor processes of business operations. They function in the same way as database management systems (DBMS). Figure 1 represents the lifecycle of BPM with four different phases: design (designing or re-designing of processes); configuration (turning of designs into code); execution (executing business processes with the help of configured system; diagnosis (analyzing the operational processes to recognize issues and enhancements (Augare & Zimányi, 2012, p. 30).



Figure 1 BPM'S Lifecysle (Augare & Zimanyi, 2012)

As highlighted by Indulekha et al. (2009), the regulatory body responsible for process compliance, turbulence, recent economy, and globalization are some of the major aspects that have escalated interest in BPM. A study conducted by Davies et al. (2006) indicates that process modeling is behind four of the top six conceptual modeling purposes. The escalated interest is in part exhibited by a rise in requests and inquiries for process modeling training in the Australian market. Additional rumors suggest that this phenomenon is also being experienced in the European and US markets Davies et al. (2006). Other attestations entail the rapid rise of the Business Process Modeling Notation (BPMN) popularity (Recker, 2010). According to Augare and Zimányi (2012), BPMN offers the tools for defining and understanding the external and internal procedures of the business, enabling firms to communicate these procedures in a standardized manner. On a large, companywide scale, process modeling requires significant efforts in aspects such as training, methodologies, tools, and the actual conduct of process modeling. Additionally, Indulekha et al. (2006) report that individuals such as business managers and analysts experience challenging situations when acquiring executive management support for initiatives of process modeling in organizations. In most cases, they have difficulties in communicating and quantifying the benefits that can be anticipated from activities of process modeling.

1.3 Evolution of BPM Tools

BPM tools have gone through a significant evolution which has been sparked by changing business needs and technological advancements. In the early 2000s, BPM tools mainly paid more attention to optimization and documentation processes. Early tools such as Visio, business process execution language (BPEL), and the architecture of integrated information systems (ARIS) enabled businesses to create static process diagrams (Herdon, 2008). These tools enhanced efficacy, minimized manual interventions, and streamlined workflows Nonetheless, as the majority of firms began to identify dynamic business processes nature, the need for highly developed tools started to emerge. The introduction of BPMS marked a huge breakthrough in the evolution of BPM tools. Smith and Fingar (2007) note that BPMS incorporated modeling, execution, and monitoring processes into a unified program, allowing organizations to manage and automate their processes more effectively. Over the period, the evolution has continued featuring the integration of aspects such as analytics,

simulation, and incorporation with other enterprise systems. According to Chinois and Trombetta (2012), modern BPM tools utilize AI technologies and cloud computing to provide intelligent, flexible, and scalable solutions that are in line with the complexities of contemporary business environments. Also, this ensured that BPM solutions are more user-friendly and accessible.

In the mid-2010s, BPM tools' attention shifted by expanding beyond automation to incorporate broader abilities of process management. Process analysis and modeling became significant elements, allowing organizations to visualization, simulation, and optimization of business processes (Zuhaira & Ahmad, 2020). The incorporation of social collaboration elements illustrated another huge step in BPM tools evolution as vendors started integrating social BPM abilities by recognizing the significance of collaboration and communication in process enhancement. This enabled stakeholders to share insights, participate in discussions, and jointly contribute to process improvements. Later, BPM tools evolved to allow emerging technologies when organizations entered digital transformation and the Industry 4.0 era. Machine learning (ML) and artificial intelligence (AI) integration resulted in intelligent automation, enabling BPM tools to adapt dynamically to varying situations and predict likely challenges (Röglinger et al., 2012). Nowadays, present-day BPM tools like ChatGPT, represent the latest stage in this journey of BPM evolution. ChatGPT introduces a conversational interface to the modeling process as the user can interact with the system using natural language, aligning with the wider human-centric design trend in BPM. This trend makes these BPM tools to be more accessible to diversified users.

1.4 Challenges in BPM Implementation

Throughout the implementation process of BPM, many challenges have been experienced grappling with organization processes. Cummings and Worley (2008) highlighted one of the major challenges is the resistance to change. Workers may be reluctant to adopt new BPM practices due to the fear of job discomfort or insecurity with modified workflows. Another challenge identified by previous researchers is the lack of executive support. They insist that visible leadership is important to the organization as it guides it through the BPM journey, allowing successful implementation. With the lack of leadership commitment, BPM programs may experience insufficient authority and resources to make transformative changes (Kotter, 1996, p. 5). In addition, the implementation of BPM requires a specific set of skills that may not be readily available within an organization. This inadequate set of skills in optimization, analysis, and process modeling makes it difficult for the organization to implement BPM successfully (Harmon, 2007). Other challenges are related to the seamless integration of BPM tools as data consistency and interoperability need to be ensured during the integration process to avert disruptions of operations. In other cases, Rosemann and vom Brocke (2010) report that inefficiencies and confusion can be led by the lack of standardized BPM terminology and practices.

Additionally, overemphasis on technology, unidentified scope and objectives, and inadequate communication pose huge risks to the successful implementation of BPM. It is understood that technology is a crucial enabler of BPM implementation but its excessive emphasis on tools without addressing organizational and cultural factors can fail. Also, BPM boundaries and goals need to be

clearly defined to ensure focused BPM efforts and avoid scope issues. As highlighted by Sharp and McDermott (2009), a lack of clarity concerning the scope and objectives of BPM can lead to vague strategies of implementation. In addition, Weske (2012) denotes that effective communication is significant during the implementation of BPM. Lack of communication during the implementation stage can result in project failure, resistance, and a lot of misunderstandings.

1.5 Emergence of Conversational Process Modeling

Conversational process modeling (CPM) showcases a paradigm shift in BPM as it introduces chatbots and natural language interfaces to enable a more collaborative and intuitive process design. CPM emergence is brought by the growing recognition of traditional graphical interface limitations in capturing the iterative and dynamic nature of business processes. Rooein et al. (2021) argue that the integration of conversational elements into BPM tools can encourage collaboration, improve user interaction, and enhance process modeling efficiency. The crucial CPM element is its capability to bridge the gap between technical stakeholders and business users, making the modeling process more accessible and inclusive. As identified earlier in this paper, traditional BPM tools often exhibited a steep learning curve for non-technical users, limiting them from active participation in the process of modeling. CPM is meant to address this issue as it allows users to associate with the modeling interface with the help of natural language, democratizing the process of modeling and minimizing the entry barrier Rooein et al. 2021.

For instance, ChatGPT integration symbolizes the technological improvements driving CPM. It allows users to address their process needs in plain language and refines the model based on user feedback through iterative interactions. According to Klievtsova et al. (2023), this conversational approach not only accommodates the dynamic and evolving modern business processes nature but also accelerates the process of modeling. In addition, traditional BPM tools could not oftentimes obtain contextual dependencies and fine details that were fundamental in real-world business processes. CPM addresses this challenge by emphasizing the significance of context-aware modeling. Also, with CPM, chatbots integrated with context-awareness abilities can request elucidations from users, making sure that a more accurate intended process representation is achieved. Additionally, CPM's collaborative nature can encourage decision-making and team communication during the modeling stage. Allen et al. (2020) suggest that CPM tools contribute to more consensus-driven and informed process models by allowing real-time collaboration through conversational interfaces. This sense of collaboration can encourage engagement and a sense of ownership among team members and enhance the models' quality.

1.6 Importance of Tool Evaluation

Evaluation of tools plays a vital part in the BPM initiatives implementation as it makes sure that the organization chooses the most appropriate tools for their specific requirements. In other words, evaluation of tools ensures that the tool is in line with the specific needs of organizations' processes, improving effectiveness and efficiency in process modeling. In addition, proper tool evaluation and substantial financial investment ensure that the organization maximizes its return on investment (RO). Through the integration of long-term cost-effectiveness and strategic tool selection, the organization can achieve the financial benefits of informed decision-making (Rosemann & vom Brocke, 2010). In addition, according to Tamm et al. (2011), one of the key considerations in the selection of a BPM tool is the seamless integration with existing IT infrastructure. Tools that cooperate well with other enterprise systems result in a more interconnected and cohesive organizational architecture, encouraging an efficient flow of information.

Also, effective communication and collaboration play a crucial part in the successful implementation of BPM initiatives. Therefore, organizations need to pay more attention to the tools that provide robust communication and collaboration support. As highlighted by Bergener et al. (2012) and Karacapilidis and Adamides (2004), collaborative aspects within BPM tools enable different people and teams to contribute their expertise, encouraging a collective responsibility and a sense of shared ownership, while BPM communication support allows for decision-making and contextual discussions, contributing to a well-documented and transparent process of modeling. Additionally, communication support within BPM tools enabled them to promote and enhance accountability and traceability. In this case, stakeholders can understand the rationale behind the changes and decisions by offering a communication trail directly related to particular process elements. Also, the accountability and traceability aspects encourage a collaborative space where insights and feedback can be easily shared and integrated into the process of modeling.

1.7 Significance of Chatbots in Business Processes

Organizations nowadays have made it a priority to expand chatbots and AI across the customer experience for various benefits. It should be noted that chatbots are oftentimes the first support interactions customers have with a business, engaging and greeting them in a convenient and friendly way. According to Maderis (2023), there are two types of bots: (a) AI chatbots that utilize machine learning or natural language processing (NLP) to understand customer requestion and enhance with every interaction and (b) decision-tree or rule-based chatbots that are easily set up to offer high customer service level as it responds to questions with predetermined responses. In addition, online shopping customers often buy products from anywhere around the world. Therefore, breaking down communication barriers is essential to providing a great customer experience. This work can be done by chatbots, offering multilingual support to customers who speak different languages.

Also, chatbots can ensure more consistent support to customers. Since the training and expertise level varies from one agent to another, consumers may experience inconsistencies when interacting with support teams. In this case, chatbots are programmed to function on predetermined frameworks and extract responses from a single source of truth, leading to consistency in customer service experiences. They can offer level-headed guidance, regardless of how the customer acts (angry, frustrated, dismissive, or rude) and how long the conversation lasts (Fonseca, 2023). In 2018, Gartner predicted that 25% of customer support and service operations would have been integrated with chatbots or virtual customer assistant (VCA) technology within engagement channels by 2020. This integration could lead to a substantial reduction in response time, resulting in enhanced customer satisfaction (Moore, 2018). Additionally, according to Chakraborty (2021), can improve communication and collaboration within organizations as they serve as intelligent interfaces for employees to coordinate tasks, submit requests, and access information, fostering collaboration, minimizing response, facilitating seamless communication within teams, and in turn, increasing the

overall productivity. Chatbots can contribute to the automation of processes through the execution of tasks, such as appointment scheduling, order processing, and data retrieval (Chui et al., 2016).

1.8 Integration Challenges with New Tools

New tool integration, such as ChatGPT, into the BPM environment, may pose various significant challenges that organizations need to avert for optimal performance and seamless incorporation. Amade et al. (2022) note compatibility of the new tool with the existing technology framework is a significant challenge. According to this study, the integration process may become more complicated when the tool's architecture conflicts with the pre-existing systems in an organization. Various levels in which compatibility issues may emerge include application programming interfaces (APIs), communication protocols, and data formats. However, this can be solved by ensuring interoperability and preventing BPM workflow disruptions (Beerepoot et al., 2023).

Additionally, a lack of understanding among employees and organizational resistance can prevent the successful integration of new tools as workers experience a learning curve when adapting to unfamiliar tools, resulting in a temporary decrease in productivity (Kuciapski, 2017). There is this aspect of scalability of the new tool which is considered crucial during the integration. As highlighted by Schwarz et al. (2010), scalability issues can emerge if the new tool cannot manage growing demand, probably limiting the capability of the organization to adapt to changing business dynamics. Therefore, for a business process to grow, the tool needs to accommodate escalated workloads without compromising performance. Also, organizations may experience issues regarding vendor updates and support if the tool provider fails to offer sufficient support or does not provide regular updates. The lack of ongoing updates and support could put the organization in a vulnerable situation to growing compatibility problems with other software components and security threats.

1.9 Business Value Generation with BPM Tools

Research suggests that BPM tools play a crucial part in driving organizational agility, efficiency, and overall business value. One way in which BPM tools have generated business value is their ability to improve operational efficiency. According to Fernández et al. (2019), BPM tools can allow organizations to optimize, analyze, and model their business processes, resulting in minimized operational costs and enhanced utilization of resources. These tools reduce manual interventions through workflow optimization and automation, which, in turn, minimizes errors and improves overall process speed (Harmon, 2007). In addition, BPM tools can smoothen transparency and visibility into organizational processes. This is considered a vital aspect of performance management and decision-making. Other studies indicate that the tools offer real-time monitoring and reporting abilities, allowing enterprises to observe key performance indicators (KPIs) and make decisions based on the acquired data. This transparency and visibility encourage continuous improvement and accountability culture, improving business value (Smith & Fingar, 2007).

Another crucial business value generation dimension with BPM tools is their role in encouraging innovation. As reported by vom Brocke and Rosemann (2014), BPM tools can support organizations in adapting to varying market conditions through the facilitation of rapid process experimentation and adjustments. These tools offer flexibility enabling enterprises to respond smoothly to the demands of the market, placing themselves in a sustained competitive position (Dumas et al., 2012). Also, BPM tools can enhance customer experience and satisfaction. As discussed by van der Aalst et al. (2003), organizations can improve consistency and quality of interactions by optimizing customer-facing processes, translating into positive brand perception and increased loyalty.

1.10 Research Scope

The scope of this study is to extensively analyze modern tools utilized in BPM, focusing specifically on conversational interface applications such as ChatGPT. It is understood that BPM plays a crucial part in improving organizational adaptability, agility, and efficiency in the dynamic landscape of business. Even though past studies recognize the significance of BPM in organizations, there is still a gap regarding how emerging tools like ChatGPT contribute to the conversational aspect of the process modeling and the business value it generates. The research adopts a systematic approach to explore ChatGPT and similar tools integration in BPM programs. This research's scope involves a rigorous assessment of existing BPM applications and cases, outlining the problems experienced during the implementation of BPM tools and the likely advantages of incorporating conversational interfaces. The study examines BPM tools' evolution, tracking their development throughout the period to modern applications, and assessing the impacts of advancement in technology on the field.

In addition, the research will extend its scope to investigating chatbots' role, especially ChatGPT, smoothing conversational process modeling. This process entails researching how NLP abilities help in enhancing collaboration, communication, and overall BPM domain efficiency. Also, this research explores the problems organizations experience during the integration of new tools into their BPM environment with a strong emphasis on the significance of coherent integration for maximizing these tools' effectiveness. This study's geographical scope is not limited to a particular region or organization, allowing for a global perspective on BPM tools trends and usage. Through BPM case studies, the research aims to offer in-depth information that can be applied to several industries and organizational settings.

1.11 Research Objective and Question

In the recent digital world, the term 'automation' is gaining significant interest in both business and industrial fields. There is also a trend of attaining deeper automation in business processes by employing business process automation (BPA) in business process management (BPM) to enhance service delivery, increase service quality, achieve digital transformation, and simplify and standardize processes (Han, 2019). Among various BPA tools used in BPM, ChatGPT has attracted rising research attention. This research thus investigates the role and influence of ChatGPT on BPM. It will also seek to determine whether ChatGPT can be utilized to deliver good business processes, such as logistics and marketing. Through rigorous assessment of existing BPM cases and applications, the research seeks to outline the problems experienced during the implementation of BPM tools and the likely advantages of incorporating conversational interfaces. The primary question of this research is: To what degree do modern tools, especially ChatGPT, effectively contribute conversational process modeling in business process management (BPM) tools? Through this

question, the researcher identifies and analyzes existing chatbots for their support of conversational process modeling as a process-oriented capability.

1.12 Conclusion

This chapter presented the research topic, providing information on the background of the study. It discussed general insights regarding the overview of business process modeling (BPM), the evolution of BPM tools, challenges faced during the implementation of BPM, conversation process modeling (CPM) emergence, the significance of tool evaluation, the importance of chatbots in business processes, and business value generation with BPM tools. Also, it outlined the research scope, objective, and <u>question</u>.

2 CHAPTER TWO: LITERATURE REVIEW

2.1 Introduction

This chapter reviews existing literature concerning the research topic, some of the aspects reviewed include BPM case studies, BPM key components, ChatGPT's role in CPM, UX in BPM tools, BPM tools evaluation frameworks, adoption challenges in BPM tools, the influence of conversational interfaces on collaboration, trends in the development of BPM tools, and the integration of AI in BPM. The information obtained in this chapter is significant as it will be used in the discussion of the research findings.

2.2 BPM Case Studies

BPM case studies offer important in-depth information about real-world applications, presenting the implication of BPM tools on enterprises across several sectors. These cases indicate the way organizations have effectively utilized BPM tools to attain their strategic goals, improve efficiency, and smoothen business processes. There are various notable examples of case studies on how organizations utilized BPM tools to optimize their operations.

2.2.1 Netflix's Digital Transformation

In 2002, Netflix, a global streaming giant, transitioned from a DVD rental-by-mail model to a streaming service, requiring a radical shift in its internal processes. Before this transformation, the company had a business model built around direct mail, where a customer would request a movie, put a few in their queue for next time, and let the anticipation build as they wait for their first DVD to arrive on their doorstep. For this to happen BPM tools were used to manage the complexities of licensing agreements, enhance customer experience, and optimize delivery of content. According to Krieg (2019), the shift from mail-in orders to cloud-streaming services enhanced customer satisfaction, enabling the company to make billions of profits. The transformation also resulted in rapid increases in brand and customer loyalty that up to now competitors still fight hard to compete in the market. In addition to the more traditional DVD rental services, Netflix took its first step into the world of streaming video in 2007, providing consumers with a streaming subscription, and giving them the option to chart their path. This case study outlines how BPM played a significant part in the evolution of the company, allowing it to adapt to technological advancement and the changing market dynamics.

2.2.2 Multinational Bank Transforming Its BPM Program

As highlighted by Bednarski (2014), the journey began around the early 2000s when a multinational financial services company with over one trillion US dollars in assets under management and operations in over fifty nations across the world decided to launch a BPM program. The primary objective was to transform how the company interacted with customers and conducted business. The initiative started in the private banking sector division of the company. Nonetheless, the BPM implementation did not succeed even though significant efforts were put into creating over one hundred thousand business process flowcharts and making them available to the employees. Reasons behind this failure include the company having no clear focus on the reason they needed certain core functionalities and that the BPM initiative lacked C-level support. After some time, the company started a new BPM program (Operation Excellence) with the full backing of the chief operating officer (COO). Through the Operation Excellence initiative, the company improved the

supporting HR process, defined the key performance indicators, and assisted in proposing a solution (Bednarski, 2014).

2.2.3 Amazon's Successful BPM Implementation

Amazon is also a significant example of the real-world application of BPM. Amazon utilizes the cloud and big data at its disposal to reimagine processes and create its model business. Through this method, the company has streamlined its business processes, automating specific parts of it. In 2017, Amazon earned a revenue of over \$400 billion, doubling the one that it had in 2015 (Shingray, 2018). Amazon's key element in its BPM implementation is its complicated process of order fulfillment within its fulfillment centers' extensive network. The centers are integrated with automation systems and advanced technologies that utilize principles of BPM to control the end-to-end process of receiving, picking, packing, and shipping customer orders. In this case, the primary objective of BPM is to make sure that every fulfillment process stage is refined for efficiency, maximizing speed, and reducing errors. Important aspects related to Amazon's story of BPM include customer-centricity and automated marketing. As indicated by Shingray (2018), Amazon pays more attention to its customers and their needs than competitors. Customer-centricity also means that Amazon can expedite shipping and other services, fulfilling its promise of fast and reliable delivery, and setting new standards for the e-commerce sector.

In addition, the company incorporates cutting-edge technologies, such as artificial intelligence (AI) and robotics, into its BPM initiative. For instance, it has robotic systems, including Kiva robots in fulfillment centers that work together with human workers to improve goods movement and minimize the time it takes to fulfill an order (Amazon, 2022). Moreover, Amazon's BPM initiative is typified by its commitment to continuous enhancement. The firm utilizes data-driven analytics and insights to observe and assess the performance of its business process constantly. This repetitive technique enables Amazon to recognize inefficiencies, bottlenecks, and areas for improvement instantly, allowing it to adapt easily to varying customer demands and market dynamics. Also, machine learning algorithms are used for personalized customer recommendations, inventory management, and demand forecasting, contributing to a customer-centric environment.

2.2.4 Use of BPM at Telefonica

Telefonica, the world's biggest telecommunication company, strategically leverages BPM in transforming and optimizing its operations, with the enhancement of customer experience being the primary objective. The BPM initiative of the company offers more responsive and smooth services to its customers, minimizes operational inefficiencies, and streamlines crucial processes. One notable example in which Telefonica has implemented BPM is the use of Blue Prism to create a front-to-back solution that utilizes machine learning, TrustPortal, and an amalgamation of more than thirty technologies. (Pinilla,2023). Pinilla (2023) reports that with the use of Blue Prism, digital workers process over 250,000 customer calls daily, at the rate of twenty calls per second. Other benefits that have been realized include a 20% reduction in operating costs (both business-to-business (B2B) and business-to-consumer (B2C) markets within-year return on investment (ROI)), an 80% reduction in average call handling time, and a 300% increase in calls handled per hour (Pinilla, 2023).

2.3 Key BPM Components

Rosemann and vom Brocke (2010) discussed six key BPM components, highlighting how every component represents a critical success aspect for BPM. These elements include strategic alignment, governance, methods, information technology, people, and culture. According to the strategic alignment aspect, BPM needs to be in line with the general organization strategy. It refers to the close connection of enterprise processes and organizational culture allowing for effective and continuous action to enhance the performance of the business. The processes should be modeled, performed, controlled, and weighed concerning the specific strategic circumstances and priorities (Burlton, 2010). The second component, *governance*, establishes transparent and appropriate accountability regarding responsibilities and roles for different BPM levels (such as operations, project, program, and portfolio). It further focuses on reward processes and decision-making design to guide process-related actions. The third element, *methods*, facilitate process modeling or analysis and process enhancement approaches (Rosemann & vom Brocke, 2010, p. 113). According to Conger (2010), Six Sigma is a good example which has at its core several integrated techniques of BPM.

The fourth component, *information technology (IT)*, entails IT-based solutions that are important to the initiatives of BPM. Dumas et al. (2005) state that BPM-related IT solutions increasingly manifest themselves in the form of process-aware information systems (PAIS) with a traditional focus on process modeling and process analysis support. Process-aware information systems are those tools that are aware of the process that needs to be performed (Rosemann & vom Brocke, 2010, p. 113. In addition, the fifth element, *people*, refers to the groups or individuals who constantly improve and use their process and knowledge and skills of managing the process to enhance the performance of the business. As a result, this aspect captures the abilities of BPM that are reflected in the organization's human capital and its environment. The last component, *culture*, incorporates the collective beliefs and values concerning the process-centered organization. This element is majorly concerned with the creation of a facilitating space that complements several initiatives of BPM. Even though some studies have regarded it as a "soft component", de Bruin (2009) stresses that *culture* can have a strong influence on the BPM success. Figure 2 summarizes six key BPM components including their capability.

2.4 Role of ChatGPT in Conversational Processing Modeling

Conversational process modeling (CPM) introduces a revolutionary approach to BPM by incorporating language interfaces, including ChatGPT, to smoothen collaboration and communication within the modeling process. ChatGPT developed by OpenAI represents a powerful language generation based on the generative pre-trained transformer (GPT) framework. ChatGPT as a modern tool is an advanced technology that can provide information on various topics and engage in real time conversation. It is an artificial intelligence (AI) There are several ChatGPT roles in CPM, such as integration of knowledge repositories, efficiency and iterative refinement, enhancement of collaboration, and democratization and accessibility.

Strategic Alignment	Governance	Methods	Information Technology	People	Culture	Factors
Process Improvement Planning	Process Management Decision Making	Process Design & Modelling	Process Design & Modelling	Process Skills & Expertise	Responsiveness to Process Change	
Strategy & Process Capability Linkage	Process Roles and Responsibilities	Process Implementation & Execution	Process Implementation & Execution	Process Management Knowledge	Process Values & Beliefs	Cap
Enterprise Process Architecture	Process Metrics & Performance Linkage	Process Monitoring & Control	Process Monitoring & Control	Process Education	Process Attitudes & Behaviors	ability A
Process Measures	Process Related Standards	Process Improvement & Innovation	Process Improvement & Innovation	Process Collaboration	Leadership Attention to Process	reas
Process Customers & Stakeholders	Process Management Compliance	Process Program & Project Management	Process Program & Project Management	Process Management Leaders	Process Management Social Networks	

Figure 2 Six Key Components of BPM (Rosemann & vom Brocke, 2010

2.4.1 Integration of Knowledge Repositories

According to Liao et al. (2023), the integration of databases and knowledge repositories in ChatGPT improves its roles in CPM. These features enable users to seek relevant information, best practices, or historical data directly within the conversational interface, allowing data-driven decision-making during process modeling. The integration expands ChatGPT abilities beyond generation, transforming it into a valuable companion for users involved in process modeling tasks. In addition, quick access to appropriate information in CPM is vital for stakeholders engaged in process modeling. Therefore, the integration of ChatGPT in CPM facilitates seamless querying and retrieval of data during modeling sessions. Also, the incorporation of knowledge repositories in ChatGPT addresses the issues of knowledge silos within the firm. Rather than depending on the users to navigate external document repositories or databases solely, ChatGPT can play the role of a centralized interface, synthesizing appropriate information and displaying it reasonably (George et al., 2023).

2.4.2 Efficient and Iterative Refinement

The role of ChatGPT in CPM goes beyond initial model creation and the iterative refinement of process models. As highlighted by George et al. (2023), users can engage in conversation with ChatGPT to explore alternative process flows, identify bottlenecks, and seek suggestions. This process of iterative refinement, motivated by ChatGPT conversational abilities, contributes to the constant enhancement of process models over time. It can generate numerous conversation threads to create a more realistic interaction between the bot and the user (George et al., 2023, p. 2). Additionally, the efficiency gains of ChatGPT in CPM are especially significant when compared to the traditional methods that may entail multiple rounds of revisions, reviews, and documentation. The capability of ChatGPT to understand the context and offer contextually relevant responses streamlines the refinement process, enabling firms to adapt quickly to the changing requirements of the business process.

2.4.3 Enhancement of Collaboration

Collaboration has been often considered a core element in effective process modeling. In this perspective, ChatGPT significantly contributes to enhancing collaboration among diversified stakeholders. By offering a conversational interface, ChatGPT smoothens the communication between team members engaged in the modeling process. In this case, stakeholders can iterate, clarify, or discuss the process models more interactively and naturally, encouraging a collaborative environment. In addition, the real-time suggestions and feedback in ChatGPT can aid users in refining their models iteratively. This collaborative and iterative aspect streamlines the process of modeling and makes sure that the final process models more accurately represent the complexities of the business operations (Polak & Morgan, 2023). Reijers (2003) outlines that conventional BPM models can sometimes run into issues entailing non-technical stakeholders in the modeling process as a result of intricate interfaces and technical jargon. In this case, the conversational interface of ChatGPT can simplify the model process, making it accessible to a broader audience (Kalla & Smith, 2023). This integration makes sure that perspectives from multiple domains are taken into account, enriching the process models with a more extensive understanding of the business operations.

2.4.4 Democratization and accessibility

Enhancement of accessibility is considered one of the major ChatGPT's contributions to CPM. Traditional BPM tools oftentimes need specialized training, limiting a group of stakeholders who can earnestly engage in the modeling process. However, with ChatGPT which is designed to understand and generate human-like content, stakeholders can interact with the BPM system using everyday language. This democratization of the modeling process allows multiple participants, such as domain experts, business analysts, and non-technical users, to actively contribute to the development and refinement of process models (Yue et al., 2023). In addition, the capability of ChatGPT to interpret and generate natural language queries makes it easier for the user to communicate their requirements and thoughts without having to navigate intricate technical interfaces (Ray & Das, 2023). This accessibility can speed up the modeling process and encourage a more collaborative and inclusive approach to BPM, breaking down the silos between non-technical and technical stakeholders.

2.5 User Experience (UX) in BPM Tools

User experience (UX) plays a crucial part in the successful adoption and use of BPM tools. Therefore, as organizations progressively identify the significance of incorporating diversified stakeholders in the process modeling and enhancement efforts, user-friendliness and overall satisfaction with BPM tools become more vital. This section explores several UX elements in BPM and how they assist in developing PM initiatives.

2.5.1 Significance of Intuitive Interfaces

Users including process owners, business analysts, and other relevant stakeholders need to easily interact with BPM tools without extensive training. In this case, an intuitive interface becomes one of the key aspects of a positive UX as it fosters broader participation, minimizes the learning curve, and facilitates quick onboarding in the process modeling activities (Recker et al., 2009). The user-friendly design enables new users to easily familiarize themselves with the functionalities and features of the BPM tool, contributing to quicker integration into the BPM processes of the organization. In terms of reducing the learning curve, through the intuitive nature of the BPM tool interfaces, users can grasp the abilities of the tool organically, reducing the resources and time needed for formal training sessions. According to Dumas et al. (2012), this is especially important in settings where rapid adaptability and deployment are vital in keeping pace with the changing business needs. Also, the intuitive interfaces reduce errors and improve accuracy as users in these interfaces are less likely to input wrong information or make mistakes, improving the process model's accuracy, decreasing the need for adjustments and corrections, and saving resources and time (Recker et al., 2009).

2.5.2 Communication and Collaboration

Oftentimes, BPM entails collaboration and communication among cross-functional teams. Therefore, tools with an excellent UX interface encourages effective collaboration and communication by offering elements such as real-time notifications, comments, and collaboration. The real-time collaboration feature enables various users to work on process models at the same time, promoting a sense of responsiveness and immediacy among team members, especially in circumstances where a rapid decision-making process is needed. As reported by Ahmad et al. (2018), the comments section allows users to add comments and annotations, providing feedback, explanation, or context on a particular element of the process. In other words, comments and annotations serve as valuable instruments for obtaining insights, clarifying details, and encouraging collaborative discussion among team members. Additionally, the BPM tool has alert and notification systems that keep all stakeholders engaged and informed. They notify users regarding important updates, pending tasks, and changes in the process model. These notifications and alerts make sure the team members are aware of the developments, minimizing miscommunication risk and improving the overall awareness within the BPM setting.

In addition, BPM collaboration extends beyond process modeling to document sharing, version control, task assignment, and tracking. As suggested by Mendling et al. (2012), effective collaboration needs coherent document sharing and version controls and BPM tools offer repositories for storing relevant documents, including process documentation, supporting materials, and guidelines. The version control feature makes sure that all users are working with the most accurate and latest information, minimizing the risk of inconsistencies and errors. In addition, BPM tools often incorporate features for assigning tasks to particular roles individuals, or roles within the organization (Stoitsev & Scheidl, 2008). These tasks or assignments can be monitored within the tools, paving the way for transparent tracking of task progress.

2.5.3 Flexibility for Diverse Users

Flexibility is an important feature in PM as it enhances the UX, particularly in settings where diversified users with different skills and roles collaborate. As reported by Mejri et al. (2018), flexible process modeling (PM) tools understand that users have different expertise levels in process modeling. For instance, process participants may require a simplified interface for the execution of tasks while business analysts might need advanced elements for detailed process design. Therefore, the tool needs to adapt to the expertise of the user, offering an interface that is in line with their tasks within the lifecycle of BPM. In addition, the tools should be tailored to provide customizable dashboards and views enhancing the flexibility of the tool and enabling users to focus on the information most relevant to their roles. For instance, a business analyst might need access to detailed process models and performance metrics, while a process owner may require high-level insights into process performance. Another thing is user-centric customization, where the user can personalize their workspace, adjusting preferences, layouts, and most used features (Kammerer et al., 2015). The significance of this aspect is that it contributes to a more personalized UX and increases efficiency by enabling a user to customize the tool to their specific requirements of workflow.

2.5.4 Visualization and Reporting

A good UX incorporates effective visualization of process models and performance metrics. Also, BPM tools need to provide strong reporting abilities to enable users to gain insights into process efficiency, recognize bottlenecks, and make informed decisions. As supported by Grossmann and Rinderle-Ma (2015), clear and visually appealing representation promotes the overall UX in assessing and optimizing processes. Business Process Model and Notation (BPMN) has been considered a significant visual modeling language used in BPM to represent intricate business processes graphically (Friedenstab et al., 2012). In addition, advanced BPM tools offer real-time monitoring dashboards that provide a dynamic view of ongoing processes. They enable users to track the status of tasks, recognize bottlenecks, and monitor key performance indicators (KPIs). This real-time tracking improves agility, allowing organizations to respond quickly to inefficiencies or deviations in their processes. Also, visualization and reporting stretch to historical performance analysis, enabling organizations to examine process performance over time. Historical data allows an organization to identify patterns, trends, and improvement areas (zur Muehlen & Shapiro, 2014). Therefore, an organization can make informed decisions to optimize processes and improve overall efficiency by assessing past performance.

2.6 BPM Tools Evaluation Frameworks

For organizations aiming to enhance their business operations, it is paramount to select the right BPM tool. The BPM tool evaluation frameworks offer the organization a systematic approach to evaluate and compare several tools based on various criteria. They assist an organization to make informed decisions that are in line with its unique objectives and requirements. Various factors that need to be considered in BPM tool evaluation frameworks include user-friendliness and accessibility, scalability and flexibility, integration abilities, performance monitoring and analytics, and compliance and security. Various researchers have highlighted user-friendliness and accessibility of the interface as critical elements of BPM tool evaluation. According to these studies, a tool needs to be inherent,

to enable users with various technical backgrounds to navigate and utilize it effectively (Reijers, 2003). In addition, scalability refers to the capability of the BPM tool to manage increasing users, processes, and workload without sacrificing performance. Organizations and their processes evolve. Therefore, needing a scalable BPM tool to accommodate the growing business needs. On the other hand, the flexibility of BPM tool evaluation involves the capacity of the tool to adapt to the changes in business requirements and processes without significant disruptions (Weske, 2019). Flexibility may further entail the ability of the tool to incorporate diverse technologies and adapt to different industry standards, ensuring that it can easily collaborate with other systems within the IT infrastructure of the organization, preventing compatibility issues, and supporting interoperability.

Another aspect is performance monitoring and analytics. An effective BPM entails constant monitoring and analysis of process performance, assessing the capacity of the tool to offer real-time insights into process execution, enabling data-driven decision-making, and recognizing bottlenecks. As suggested in past studies, a BPM tool equipped with strong performance monitoring abilities allows the organization to monitor the execution of its processes in real-time (Kang et al., 2012). This entails tracking KPIs to analyze several aspects of process efficiency, including error rates, resource utilization, and cycle time. Additionally, performance monitoring of the organization to pinpoint bottlenecks that prevent overall process efficiency through visualization of the flow of activities and the time each task takes. On the other hand, BPM analytics entails the utilization of advanced data analysis methods to obtain meaningful insights from process data. For instance, predictive analytics may be used to foretell future process performance based on historical data, enabling the organization to forecast and address potential challenges (Harmon, 2007). Also, through advanced analytics, the organization may analyze process data to uncover correlations and patterns that inform strategic decisions for process improvement.

It is important to consider compliance and security in the evaluation of the BPM tool, particularly in an organization where data protection and regulatory adherence are crucial. In this case, compliance is the adherence of the BPM tool to industry-specific standards and regulations governing process execution and data handling. For instance, financial institutions may need to comply with regulations such as the Sarbanes-Oxley Act (SOX) (Lekatis, 2019), while healthcare facilities may require adherence to the Health Insurance Portability and Accountability Act (HIPAA). On the other hand, the BPM tool's security entails an intricate approach to protect sensitive data, mitigate potential risks, and prevent unauthorized access. Evaluation frameworks examine carefully the security features of the tool, including secure protocols for data transmission, encryption mechanisms, and access controls. In addition, a BPM tool needs to offer strong mechanisms of authentication to ensure that only authorized personnel can access and modify data (Reijers, 2003).

2.7 Adoption Challenges in BPM Tools

Adopting BPM tools has proved to be a challenging process that many organizations often find difficult due to several factors spanning from human, organizational, and technological dimensions. Some of these factors include resistance to change, inadequate communication and training, technological challenges, alignment with organizational goals, lack of top management support, and balancing flexibility and standardization.

2.7.1 Resistance to Change

Resistance to change among employees has been widely regarded as one of the primary challenges in BPM tool adoption. According to Pereira et al. (2019), employees may be accustomed to the existing processes, and introducing new tools may disrupt their established routines. This resistance can manifest as reluctance to learn and use the new tools, resulting in a slow rate of adoption. Several sources could lead to this resistance to change among employees. Among them are concerns about job security, perceived loss of control, and fear of the unknown. Employees may develop a fear that the BPM tools will alter or replace their roles resulting in anxiety and uncertainty. Also, a lack of involvement in the decision-making process may make employees perceive the changes as imposed other than collaborative, contributing to resistance. This resistance to the adoption of BPM tools can manifest in various ways within organizations. For instance, employees may vocalize concerns, express skepticism, or exhibit passive resistance by avoiding engaging with the new tools. In other cases, they may actively resist by undermining the process of adoption or challenging the tools' necessity. Overcoming this resistance may force the organization to invest in aspects such as organizational support, education, and training.

2.7.2 Inadequate Communication and Training

Inadequate communication and training have often been considered challenges in the BPM tools' adoption. When introducing new BPM tools, a company needs to make clear communication with employees as a way of garnering their support. Employees need to understand the reasons behind adopting BPM tools, how they will benefit, and the changes they expect in their daily tasks. Without these communications, resistance, and misconceptions may emerge among employees, potentially limiting the successful BPM integration into organizational culture (Bandara, 2007). In addition, inadequate training may make employees unfamiliar with the new tools, resulting in frustration and reluctance to integrate them into their daily workflows. Therefore, effective training programs, such as educational materials, workshops, and hands-on training sessions need to be tailored to the specific needs of different user groups to ensure that employees acquire the needed knowledge and skills to navigate and utilize BPM tools proficiently. Also, offering continuous resources and support for users after the initial implementation phases is crucial as it addresses any emerging issues and encourages a culture of ongoing learning.

2.7.3 Technological Challenges

In this case, issues may vary from data migration complexities to compatibility challenges. BPM tools are oftentimes required to operate in collaboration with several enterprise systems, such as enterprise resources planning (ERP) or customer relationship management (CRM) systems. Ensuring the interoperability between these systems and BPM tools is significant for attaining a broader perspective of organizational processes. Interoperability means the effective capacity of mutual communication of information, results, requests, commitments, and proposals. It covers pragmatic, semantic, and technical interoperability. Pragmatic interoperability captures the partner's willingness for actions needed for collaboration while semantic interoperability means the content of the message is understood in the same way by receivers and senders. On the other hand, technical interoperability means that a message can be passed from one application to the other (Kutvonen, 2023, p. 1). Therefore, the incompatibility can result in hindered communication between systems and information gaps, compromising the overall efficiency of BPM programs.

In addition, the migration of data is an intricate process that needs careful planning and execution to avoid inconsistencies, corruption, or data loss. Challenges related to data migration may arise when transferring data from traditional systems to modern BPM tools, especially when dealing with complex data structures or large datasets. Also, BPM tools may experience compatibility challenges with other platforms and software applications within the ecosystem of an organization (Imanipour et al., 2012). These problems may arise as a result of differences in software versions, protocols of communication, and data formats, resulting in compromised data integrity and disruptions of workflow in an organization.

2.7.4 Alignment with Organizational Goals

Alignment with organizational goals means strategic integration of BPM initiatives, involvement of key stakeholders, and linking BPM benefits to organizational objectives. In this case, alignment entails a careful examination of how a BPM tool can contribute to KPs and support the organization's overall vision and mission (Rosemann & vom Brocke, 2010). It needs a collaborative approach between business and IT stakeholders to describe how a BPM tool will improve processes and contribute to attaining the strategic objectives of the organization. In addition, top-level executives play a crucial part in setting organizational goals and directions. Therefore, their understanding and endorsement of a BPM tool are significant in securing needed resources, both in terms of personnel and budget. Whether it is responding more quickly to market changes, improving customer satisfaction, or enhancing operational efficiency, linking PM benefits to organizational objectives in this case means aligning the value proposition of BPM tools with a specific organization's priorities and goals. However, these three aspects have proved to be a challenge causing an unclear understanding of how process modeling (PM) tools contribute to attaining the objectives of the organization.

2.7.5 Lack of Top Management Support

Top management plays a vital part in shaping organizational strategies, encouraging a culture of innovation, and allocating resources. Therefore, a lack of top management support will undermine the adoption process of Process modeling tools, leading to a lack of resource allocation, skepticism and reluctance among employees, and a risk of misalignment between the overall organizational strategy and BPM efforts. It is understood that the implementation of BPM tools requires skilled personnel, technological infrastructure, and financial investments. Without top management backing, acquiring the required resources becomes a challenge, leading to incomplete implementations, delays, or even cancellation of the project (Jeston, 2018). In addition, employees in an organization tend to follow the lead set by top executives and leaders demonstrating the commitment to BPM tools and communicating the benefits of the adoption positively mitigate resistance from staff members and affect the organizational culture.

Contrarily, a lack of visible support from executives may lead to skepticism and reluctance among employees, limiting BPM tools' integration into daily roles. Also, Process Modeling tools are most effective when they are implemented with a clear understanding of how they contribute to attaining broader objectives of business operations. Therefore, poor guidance from top management may result in a risk of misalignment between the overall organizational strategy and BPM efforts. Addressing these challenges requires the organization to encourage a culture where top management proactively champions BPM initiatives (Jeston, 2018). This may entail offering education on how BPM tools align with the goals of the organization, stressing on strategic importance of these tools, and creating awareness among executives concerning the benefits of BPM tools.

2.7.6 Balancing Flexibility and Standardization

Another significant challenge may entail striking the right balance between flexibility and standardization. In BPM, standardization means the development of a best practice or standard process to be utilized as a template for all instances of the process throughout the organization (Tregear, 2010, p. 308). It allows an organization to attain operational excellence, minimize variability, and establish workflows. In other words, standardized processes smoothen easier tracking, analysis, and continuous improvement. The major challenge of emphasizing standardization is that it prevents organizational agility. Employees resist standardized processes that do not accommodate the unique aspects or specific needs of their roles. This resistance may result in diminished user adoption, leading to the failure of BPM initiatives. On the other hand, flexibility addresses the dynamic nature of the business process and accommodates the specific needs of different projects or departments within an organization. Flexibility in BPM tools allows for the adaptation of processes to the changing circumstances, encouraging responsiveness and innovation. Now, the challenge becomes finding an optimal balance between these two aspects. The organization should determine the core processes that benefit from standardization while allowing for flexibility in sections where customization is vital. However, various strategies such as using BPM tools that provide configurable options, performing thorough process analysis, and engaging key stakeholders in the design process, can be used to overcome the challenges associated with balancing flexibility and standardization.

2.8 Impacts of Conversational Interfaces on Collaboration

According to past studies, traditional BPM tools oftentimes demand specialized training, limiting accessibility to selected experts. However, the implementation of conversational interfaces, powered by technologies such as ChatGPT and NLP, transforms the BPM framework by making BPM more collaborative and inclusive. They democratize the Business process modeling experience by enabling stakeholders from various backgrounds to engage with BPM tools with the utilization of natural language. This inclusivity creates a space where information is transferred across various roles and departments in an organization. For instance, business users, having non-technical expertise, can proactively engage in the modeling process, contributing valuable insights and obtaining their domain-specific knowledge (Yue et al., 2023). Additionally, the capability of ChatGPT to interpret and generate natural language queries makes it easier for the user to communicate their requirements and thoughts without having to navigate intricate technical interfaces (Ray & Das, 2023). This accessibility can speed up the modeling process and encourage a more collaborative and inclusive approach to BPM, breaking down the silos between non-technical and technical stakeholders. In addition, conversational interfaces can accelerate iterative model refinement, allowing team members to participate in natural language conversation and discuss process variations, optimizations, and exceptions. This aspect promotes BPM agility, enabling an organization to swiftly adapt to the changing requirements of business operations. It is understood that traditional BPM tools oftentimes entailed a steep learning curve, creating a communication barrier between users and BPM experts. Nonetheless, conversational interfaces, with their user-friendly and intuitive nature, can break down this barrier, offering a platform where stakeholders can seek clarification, ask questions, and express ideas in a natural language format. Also, conversational BPM tools can improve UX, making the business process modeling process more engaging and enjoyable. According to Ahmad et al. (2018), this positive UX can foster user adoption of BPM practices throughout the organization by promoting a sense of familiarity and ease of use. Decision-making during the modeling process is also sped up with conversational BPM tools as stakeholders can quickly seek guidance, inquire about the potential influence of certain decisions, or ask for best practices. This real-time access to information allows users to make informed decisions during collaborative modeling sessions, improving the overall process models' quality.

2.9 Trends in BPM Tool Development

The development of BPM tools continually evolves to meet the changing modern business needs. The most significant trend in the development of these tools is the integration of machine learning (ML) and artificial intelligence (AI) abilities. AI improves predictive analytics, decisionmaking processes, and automation within BPM processes (Aggarwal, 2021). This trend aligns with the broader movement toward intelligent automation, enabling organizations to constantly enhance their processes and make data-driven decisions. Another trend is the rise of no-code and low-code development platforms that allow users with different technical expertise to create and modify BPM tools with minimal coding effort (Bock & Frank, 2021). This BPM democratization motivates business users to proactively engage in the development and modification of processes, encouraging collaboration between business stakeholders and IT experts. Also, there is a growing prevalence of remote work operations in BPM tools development. In this case, users can access and manage business operations remotely, enhancing agility and responsiveness (Chang et al., 2016). There is increased prioritization of user-centric BPM tools enhancing the overall UX. The collaborative features, personalized dashboards, and intuitive interfaces in BPM tools enable the organization to improve engagement and user adoption. This trend focuses on making BPM tools appealing and accessible to different users, such as individuals who have no technical skills or experience.

In addition, Mercia et al. (2018) highlight that cloud-based BPM solutions increase accessibility, scalability, and flexibility in business processes. This feature helps an organization in the enhancement of collaboration, seamless updates, and rapid deployment across geographically dispersed teams. Another emerging trend in BPM development is blockchain integration for process transparency (Viriyasitavat et al., 2018). This integration offers a decentralized and tamper-resistant ledge that records transactional processes, reducing fraud risks and ensuring data integrity. In addition, blockchain technology can promote: (1) trustworthiness as the quality of service (QoS) information is persistent, (2) autonomy since services can carry out functionalities autonomously without the intervention of brokers or central authorities, and (3) security provided by strong

cryptography such as powerful cryptographic hash such as SHA-256 (Secure Hash Algorithm 256bit) (Viriyasitavat et al., 2018, p. 4). Furthermore, König et al. (2020) acknowledge that the integration of robotic process automation (RPA) into the development of BPM tools can automate repetitive and rule-based tasks, enabling an organization to attain greater operational efficiency.

2.10 Integration of AI in BPM

BPM's AI integration represents a transformative approach, revolutionizing the way organizations proceed with automation, decision-making, and optimization. According to Ng et al. (2021), AI hugely impacts BPM by enabling decision support and intelligent automation. Machine learning algorithms integrated into BPM tools can assess historical process data to recognize trends, predict likely bottlenecks, and recommend strategies for optimization. Additionally, AI-driven decision support systems can allow an organization to make context-aware and data-driven decisions within the architecture of BPM. For example, AI algorithms can analyze real-time data to vigorously optimize task assignments, allocate resources, and adjust workflow priorities regarding the varying conditions of business. Another significant area in which the integration of AI hugely benefits BPM is enhanced predictive analytics. It is understood that with the utilization of predictive modeling, BPM tools can recommend pre-emptive actions, recognize potential risks, and predict process outcomes.

In addition, AI algorithms can assess large datasets generated by business processes to recognize correlations and hidden patterns. This consecutively allows an organization to optimize process flows, anticipate requirements of resources, and improve forecasting accuracy for better outcomes. Also, the incorporation of NLP and AI-driven chatbots in BPM streamlines user interactions by facilitating intuitive communication between BPM systems and users, and, in turn, making business process modeling more accessible. For instance, ChatGPT can help users by offering instantaneous support, clarifying concepts of modeling, and defining steps of the process in BPM (Ray, 2023). This conversational feature encourages collaboration among different stakeholders in the BPM lifecycle and improves the UX.

2.11 Conclusion

This chapter reviewed existing literature concerning the research topic. Some of the aspects reviewed include BPM case studies, BPM key components, ChatGPT's role in CPM, UX in BPM tools, BPM tools evaluation frameworks, adoption challenges in BPM tools, the influence of conversational interfaces on collaboration, trends in the development of BPM tools, and the integration of AI in BPM. The information obtained in this chapter is significant as it will be used in the discussion of the research findings.

3 CHAPTER THREE: METHODOLOGY

3.1 Introduction

This chapter discusses the methods used to collect information concerning the research question. It highlights different research approaches, participants, data collection, and research strategies and how they were utilized to offer an in-depth understanding of the benefits, challenges, and implications related to the integration of conversational interfaces such as ChatGPT in BPM tools. It also outlines how the collected data (both qualitative and quantitative) was analyzed. It winds up by discussing ethical considerations that were ensured to safeguard participants' rights, privacy, and dignity.

3.2 Research Approach

This research adopted a mixed-methods approach, combining both quantitative and qualitative research methods. This approach was selected to obtain a holistic view of the phenomenon under investigation, offering both depth and breadth to the analysis. It adds insight and understanding that might be missed when using a single method (Migiro & Magangi, 2011, p. 3763). In addition, combining qualitative and quantitative approaches can balance out the limitations of a single method, give a researcher more granular results than an individual method, and offer stronger evidence and more confidence in the findings.

3.2.1 Qualitative Component

The qualitative research component entailed case studies and in-depth interviews. With the use of structured interviews (Appendix A) with BPM professionals, the researcher aimed to uncover significant insights into the experiences of individuals who had engaged with ChatGPT in business processes. Open-ended questions were also integrated to enable participants their experiences, perceived benefits, and challenges experienced when integrating conversational interfaces. In the aspect of case studies, the qualitative approach sought to delve into specific ChatGPT implementation instances in BPM. By selecting studies that have covered ChatGPT integration in BPM in specific organizations or industries, this research aimed to offer detailed narratives of the before-and-after scenarios. In general, the qualitative component of this research was to help the researcher understand the contextual aspects affecting ChatGPT's effectiveness in diverse business environments.

3.2.2 Quantitative Component

The quantitative research component entailed surveys (Appendix B) to acquire structured data from a larger sample of professionals engaged in BPM. The closed-ended questions in the survey questionnaires were meant to generate quantitative data on the ChatGPT usage prevalence, satisfaction level of users, and perceived influence on business processes. In general, this component helped the researcher to broadly understand patterns and trends connected to ChatGPT adoption in BPM across different industries. The surveys were distributed through various channels, including targeted emails, professional networks, and industry-specific forums. Over 75 surveys were distributed, aiming for a sample size of 40-70 respondents. Key metrics in these surveys included the percentage of BPM professionals using ChatGPT, the average levels of satisfaction, and the distribution of usage across various industries.

3.3 Participants

The participants in this research included BPM professionals, IT and technology experts, managers, and stakeholders. The researcher understood that BPM professionals form a cornerstone of the participant pool as they possess hands-on experience in BPM tool implementation. They can easily offer in-depth information concerning the benefits and challenges associated with integrating conversational interfaces. Including IT and technology experts in the research was crucial for a holistic assessment of the technical elements of incorporating ChatGPT into BPM tools. Their experience is significant in analyzing the scalability, compatibility, and technical challenges related to conversational interface integration. In addition, stakeholders and managers were acknowledged due to their roles in the decision-making processes connected with business processes. Their integration into the participant pool allows the researcher to assess overarching goals, budgetary constraints, and strategic considerations that implicate ChatGPT adoption. To ensure a global perspective, the researcher ensured that participants were from different organizations and geographic locations. This was meant to capture regional variation in the ChatGPT adoption and adaptation in BPM.

3.4 Data Collection

3.4.1 Interviews

According to Ryan et al. (2009), interviews are utilized as a strategy to gain in-depth information concerning participants' values, beliefs, perceptions, and experiences about the topic at hand. They help the researcher acquire unique and original data directly from a source based on the requirement of the study. This research entailed structured interviews with a diverse sample of 10 participants (n=10). The decision to include 10 participants for the interview was carefully considered, by evaluating the research scope and the in-depth of analysis needed. This approach aimed at obtaining enough data for the research. These individuals included managers, stakeholders, IT specialists, and BPM consultants from various industries. In addition, the interviews were conducted virtually using a video conferencing tool to allow an accessible and flexible mode of interaction. With consent from the participants, the recorded interviews to ensure participants' responses were kept for future reference. Also, the researcher used Otter.ai to convert spoken words into text, allowing for subsequent analysis.

3.4.2 Surveys

In this case, online surveys were disseminated through various channels, including targeted emails, professional networks, and industry-specific forums to a diverse pool of professionals engaged in BPM. This helped the researcher to make the survey questionnaire reach a geographically dispersed audience. The survey tool entailed closed-ended questions to help the researcher acquire quantitative data on the frequency of use of ChatGPT, overall satisfaction level, and perceived benefits. The last parts of the tool included open-ended questions to encourage respondents to share specific utilization cases, challenges experienced, and recommendations for improvement. The openended responses were subjected to thematic analysis, offering an in-depth understanding of individual experiences. On the other hand, SPSS (Statistical Package for the Social Sciences) was used to analyze the quantitative data from the closed-ended responses.

3.4.3 Case Studies

For the case studies, the participants collected information by analyzing and comparing the findings of past studies on various organizations and industries. In this case, only studies focusing on the use of ChatGPT in business processes were selected. This methodological approach enabled the researcher to dissect the intricacies of successful implementations, interpreting the contextual aspects that contribute to their efficiency. The acquired data were analyzed through a qualitative lens with the utilization of methods such as explanation-building and pattern-matching. Explanation building is a special type of pattern matching that analyzes the case study data by building an explanation regarding the case (Baškarada, 2013, p. 12).

3.5 Sampling

Sampling is usually conducted because it is always impossible to study the entire population (Andrade, 2020, p. 102). It is a vital element of research methodology that entails selecting a subset of cases or individuals from a larger population. In the scenario of examining ChatGPT roles in BPM, the researcher ensured appropriate sampling technique was used to ensure representativeness and generalizability in the study findings.

3.5.1 Interviews

A purposive sampling technique was deployed to ensure study participants were selected based on specific characteristics relevant to the research objectives. The main purpose of choosing this sampling method was to ensure diverse and knowledgeable participants whose experiences can offer in-depth information concerning ChatGPT integration in BPM (Ames et al., 2019). The basis for choosing interview participants varied deliberately to acquire a broader spectrum of perspectives. It aimed to uncover an extensive range of successes, challenges, and experiences connected with ChatGPT implementation in BPM. Also, the sampling methods made sure that the findings were not limited to a specific industry or demographic, improving the applicability and generalizability of research outcomes.

3.5.2 Surveys

In the context of this research, the convenience sampling technique was utilized due to its accessibility and practicality in reaching a diverse range of professionals engaged in business processes. This sampling method entails taking samples that are conveniently located around a location or internet service (Edgar & Manz, 2017, 860). Also, it involves choosing participants based on their willingness to participate in the research process. Survey participants were recruited through various channels, including targeted emails, professional networks, and industry-specific forums from a diverse pool of professionals engaged in BPM., allowing for a broad representation of individuals involved in different roles and sectors.

3.5.3 Case Studies

In this case, criterion sampling was used to select cases based on predicted criteria that are vital to the objectives of the research (Patton, 2001, p. 238). For this research, the criteria for choosing case studies revolved around the successful ChatGPT integration in the BPM process across different organizations and sectors. Before deploying criterion sampling, the researcher used search engines, such as Google Scholar, PubMed, BASE, and CORE, to identify research articles or case
studies that investigated organizations or businesses that have implemented ChatGPT or similar conversational interfaces in their BPM processes. After that, the first criterion considered studies or cases that explored organizations that have implemented ChatGPT and have demonstrated measurable enhancement in effectiveness, efficiency, and other performance metrics within their BPM frameworks. This made sure that the researcher selected cases that were in line with the research's primary focus (understanding the ChatGPT influence on business processes). The second and last criterion entailed industry diversity, including cases from different sectors. This approach enhanced the findings' generalizability across various business domains, offering a more extensive understanding of the applicability of ChatGPT in different contexts of BPM.

3.6 Research Strategy

A sequential explanatory design was utilized, incorporating both qualitative and quantitative research methods to offer a rigorous understanding of the impact of ChatGPT on BPM. The strategy began with a quantitative phase where surveys were distributed online through various channels, including targeted emails, professional networks, and industry-specific forums to a diverse pool of professionals engaged in BPM. The researcher in this case purpose was to acquire broad trends concerning the prevalence use of ChatGPT, perceptions, and user satisfaction within the BPM community. The next step entailed using case studies and interviews (a qualitative focus) to dive into the contextual nuances and intricacies of the influence of ChatGPT on BPM. This strategy enabled the researcher to triangulate data, allowing for the convergence of findings from different sources. The quantitative stage established a broader understanding of the research topic, while the qualitative stage refined the obtained information, allowing a deeper assessment of the complexities surrounding the role of ChatGPT in BPM. By incorporating both techniques, the research strategy aimed to offer an extensive answer to the research's primary question (To what degree do modern tools, especially ChatGPT, effectively contribute conversational business process modeling in business process management (BPM) tools?), contributing valuable insights to the conversational business process modeling and BPM field.

3.7 Ethical Consideration

It is paramount for a researcher to ensure the research is conducted ethically, safeguarding participants' rights, privacy, and dignity. In this research, several ethical considerations were ensured. Participants were offered detailed information concerning potential risks, procedures, and the purpose of the study, using clear and comprehensible language. Concerning anonymity and confidentiality, all data collected from surveys and interviews were anonymized to protect the identities of participants. The researcher also ensured that individual responses could not be traced back to specific participants. Before the research process, participants were assured of their voluntary participation and were granted the autonomy to decide whether to answer specific questions and the freedom to withdraw from the research process freely without any repercussions. In addition, to minimize harm to participants, the researcher carefully drafted questions to avoid biases. Furthermore, the research team was attentive to the emotional well-being of each participant during interview sessions. To ensure data security, physical records were kept in locked and secure locations while digital data were stored in secure servers with restricted access.

3.8 Conclusion

This chapter discussed the methods used to collect information concerning the research question. It highlighted different research approaches, participants, data collection, and research strategies and how they were utilized to offer an in-depth understanding of the benefits, challenges, and implications related to the integration of conversational interfaces such as ChatGPT in BPM tools. It also outlined how the collected data (both qualitative and quantitative) was analyzed. It wound up by discussing ethical considerations that were ensured to safeguard participants' rights, privacy, and dignity.

4 CHAPTER FOUR: DATA ANALYSIS AND PRESENTATION OF RESULTS

4.1 Introduction

This chapter presents the findings from interviews, surveys, and case studies. It explains the participants' demographic data and they are significant to the research. It also provides some insights acquired from the research process that could be important in answering the research question. The findings presented in this section will be used in the next chapter to discuss the results of the previous studies to find the answer to the research question.

4.2 Data Analysis

Quantitative data from online surveys were subjected to statistical analysis, with the help of SPSS tool. This entailed descriptive statistics to assess the prevalence of use of ChatGPT, levels of satisfaction, and other trends or patterns. Correlation analysis was also used to investigate the potential relationship between specific BPM processes and ChatGPT impact. In addition, insights from case studies and interview transcripts underwent thematic analysis. Themes were identified, coded, and categorized to unveil recurring patterns, success factors, and challenges connected to the incorporation of ChatGPT into BPM. The researcher then triangulated different data sources by comparing and contrasting them to improve the reliability and validity of the findings.

4.3 Research Findings

4.4 Quantitative Data (Online Surveys)

4.4.1 Demographic Analysis

A total of 45 respondents were involved in the survey with a 100% response rate. The mean age of the respondents was 35.6 years (SD=5.15). This indicates that most of the participants were in their mid-30s and their age distribution is moderately spread out (most of the ages are within five years of the mean). The average years of experience in BPM was about 9.1 years (SD=2.02). This means that the mean years of experience in BPM was approximately 9 years, suggesting that the information given by the respondents is based on the experience gained with BPM tools. The distribution of years of experience is less spread out, outlining a more homogeneous experience level in BPM among respondents. In addition, most of the participants (40%) hold at least a bachelor's degree, highlighting a well-educated participant pool. The distribution of the current position suggests a balanced representation of roles, with a significant presence of supervisors and managers, outlining a leadership perspective in the ChatGPT adoption and usage in BPM. Additionally, the breakdown of sectors represents a diverse representation of industries, ensuring that the information is not limited to a particular industry and that findings can be generalized across different contexts of organizations. A summary of demographic information from online surveys is presented in Table 1.

Variable	Category	Frequency (n)	Percentage
Age Distribution	Under 25	8	18
	25-34	15	33
	35-44	12	27
	45-54	7	16
	55 and above	3	6
Highest Education Level	High School or Equivalent	3	7
	Bachelor's Degree	18	40
	Master's Degree	15	33
	Doctorate/Professional Degree	9	20
Current Position	IT Specialist	10	22
	Executive/Leadership Role	8	18
	Supervisor/Manager	15	33
	BPM Consultant/Analyst	12	27
Sector	Healthcare	10	22
	Manufacturing	12	27
	Finance	8	18
	IT	7	16
	Others	8	18
Years of Experience in BPM	Less than 2 years	5	11
	2-5 years	12	27
	6-10 years	10	22
	11-15 years	9	20
	16 years and above	9	20

4.4.2 Prevalence of ChatGPT Usage

The focus of this item was to identify whether respondents' organizations utilize ChatGPT in their BPM tools. The researcher asked the respondents whether they had considered or implemented ChatGPT in their BPM processes. Close to 70% of the respondents suggested that their organizations currently utilize ChatGPT in their BPM tools, suggesting a significant prevalence of adoption of ChatGPT within the surveyed cohort. Responses from two of the respondents are highlighted below.

"Yes, we recently began integrating ChatGPT into our BPM tools. Its implementation is still in the early stages but we are now running pilot projects to examine its implications. Initial feedback from our team that is engaged with customer service processes is promising. We are specifically interested in leveraging ChatGPT to handle customer queries more conversationally. We plan to slowly but correctly expand ChatGPT use across other functions depending on the findings from our pilot."

"We implemented ChatGPT in our BPM tool last year, mainly to optimize supply chain processes. Its conversational interface has smoothened communication between various departments, allowing a quicker decision-making process. Something to add is that we have experienced a significant reduction in turnaround time for order processing and enhanced coordination among team members. We managed to handle the initial learning curve and the benefits have surpassed the challenges we experienced during the implementation period."

4.4.3 Role of ChatGPT in BPM and Conversational Process Modeling

4.4.3.1 Benefits

This item was meant to understand the positive outcomes and benefits observed by organizations that incorporated ChatGPT in their BPM processes. The most notable benefits outlined in participants' responses were better customer interactions (70%), enhanced decision-making (78%), and efficiency (85%). These responses acknowledge the role of ChatGPT in improving communication and engagement, technology contributes to the efficient and informed decision-making process, and organizations implementing ChatGPT experience tangible improvement in their BPM processes. One of the respondents, a manager in a retail company, highlighted that ChatGPT implementation had truly revolutionized their inventory management processes. The capability of the system to understand and process natural language queries significantly minimized the time taken on order processing and inventory checks. She also stated that their team now has more time to focus on strategic tasks, resulting in a substantial enhancement in overall process efficiency.

In addition, in conversational process modeling (CPM), ChatGPT can contribute to a more intuitive and engaging design environment. When asked about the role of ChatGPT in CPM, the majority of respondents emphasized ChatGPT's role in improving user engagement (80%), fastening process iterations (63%), and enhancing flexibility in process design (54%).



Figure 3 below displays the benefit as reported by the participants

4.4.3.2 Challenges

Apart from the benefits, the item also examined the obstacles and challenges experienced during ChatGPT implementation in BPM processes. Respondents were asked to highlight some of the challenges (if any) they encountered when integrating ChatGPT into their BPM processes. The majority of the challenges identified from the responses include employee training and adaptation (55%), data privacy concerns (45%), and integration complexity (60%). Some of the responses from two respondents (an IT specialist in technology and a BPM professional in Finance) are highlighted below.

"While the benefits are clear, ChatGPT integration into our existing BPM systems was more challenging than expected. Ensuring smooth communication and collaboration between existing BPM tools and ChatGPT posed a huge issue. It called for a substantial collaboration between our BPM teams and IT experts. While we are reaping the rewards now, managing the initial implementation obstacles was a significant undertaking." -IT Specialist in technology.

"In the finance industry, data privacy is a significant feature. While we ChatGPT's potential benefits in automating routine financial processes, there are lingering concerns regarding the security of sensitive financial data. However, we are working with the IT security team to ensure this issue is fully addressed before expanding ChatGPT's use in crucial financial processes." -BPM professional in Finance.

When asked about the effectiveness of ChatGPT in supporting CPM, about 44.4% of participants believed that ChatGPT supports CPM very effectively in their BPM tools, while 24.4% and 15.5% reported partly effectively and effectively, respectively, 4.4% were inconsistent with their responses. The summary of findings in this category is highlighted in Figure 4.



Figure 4 Effectiveness of ChatGPT in Supporting CPM

4.5 Qualitative Data Analysis (Interviews)

4.5.1 Demographic Analysis

A total of 10 were interviewed by the researcher with a 100% response rate. The mean age of participants was 38.5 years (SD=7.74). This implies a moderately diverse age group, which was vital for the researcher to understand how different generations perceive and interact with ChatGPT in the PM context. The participants' mean years of experience was 8.7 years (SD=4.72). This indicates a moderately experienced group, which was beneficial for the researcher to analyze how professionals with different experience levels perceive the ChatGPT integration into BPM processes. The standard deviation suggests that participants have diverse expertise levels in BPM. In addition, the information concerning participants' highest education level indicated that the majority of interviewed participants (80%) had either a bachelor's degree or a master's degree. This is significant to the research as it means that the participants had enough knowledge. Also, different organizations mean that the researcher can acquire in-depth information concerning the practical applicability of ChatGPT. Different participants' current positions suggest a balanced representation of roles, outlining a leadership perspective in the ChatGPT adoption and usage in BPM. Table 2 summarizes participants' demographic data from interviews.

Variable	Category	Frequency (n)	Percentage
Age Distribution	Under 25	1	10%
	25-34	3	30%
	35-44	4	40%

Table 2 Participants' Demographic Data from Interviews

	45 and above	2	20%
	55 and above	3	30%
Highest Education Level	Bachelor's Degree	4	40%
	Master's Degree	4	40%
	Doctorate/Professional Degree	2	20%
Current Position	IT Specialist	3	30%
	Executive/Leadership Role	2	20%
	Supervisor/Manager	2	20%
	BPM Consultant/Analyst	3	30%
Sector	Healthcare	2	20%
	Manufacturing	1	10%
	Finance	2	20%
	IT	3	30%
	Others	2	20%
Years of Experience in BPM	Less than 3 years	1	10%
	3-5 years	2	20%
	6-10 years	4	40%
	11-15 years	2	20%
	16 years and above	1	10%

4.5.2 Implementation Challenges

This item sought to uncover various challenges related to ChatGPT implementation in BPM processes. The majority of participants' insights and experiences highlighted the common challenges of incorporating ChatGPT into existing BPM tools. Common challenges noted include customization complexity, organizational adaptation, technical hurdles, and integration complexities. One of the participants, a software developer, brought attention to the complexity of customizing ChatGPT. He highlighted that they experienced a significant hurdle in customizing ChatGPT to suit their specific business processes. The participant added that while ChatGPT provides a broad range of abilities, tailoring it to their unique requirements demands a deep understanding of both internal processes and tool capacities. Another participant accentuated the technical challenges experienced during the

implementation stage. It was noted that it is difficult to ensure secure compatibility and communication with existing IT infrastructure. Additional responses are quoted below.

"The challenge of integrating ChatGPT in our BPM processes was not just technical, it was also about getting every person in the organization on board. Some of the team members were resistant to adapting to the conversational nature of the processes. However, this issue was addressed by training the members and changing the management." -Operations Manager.

"During the initial implementation of ChatGPT, we experienced technical challenges related to the ChatGPT compatibility with our existing IT infrastructure. Ensuring smooth integration and secure communication with other tools was a crucial concern. It had to take us a notable amount of time to iron out these technicalities. Right now, we are reaping the benefits. We are even planning to integrate it into our other business processes." -IT Manager.

4.5.3 Benefits of ChatGPT

This part sought to identify ChatGPT implementation benefits. One of the most significant themes that emerged from the interviews was enhanced customer interactions. Participants consistently stated how the conversational abilities of ChatGPT improved levels of customer service. They outlined that ChatGPT enabled more intuitive and natural interactions, resulting in increased customer satisfaction. For instance, one participant expressed that ChatGPT had revolutionized their customer support and the natural language processing abilities had made their interactions with clients more personalized and customers consistently appreciated their responsiveness. Another participant stated that:

"ChatGPT implementation into our BPM process has been a game-changer for our clients. Unlike before, the conversations feel more human and the capacity of our systems to understand our customers' context brings a personalization level that was previously unmatched. Our customers have noticed, and it is reflecting positively in customer satisfaction metrics." -A BPM Consultant.

Another significant positive impact identified was that ChatGPT streamlined decision-making processes within BPM. The majority of participants (67%) stress how the capacity of ChatGPT to rapidly process and interpret information contributed to quicker decision cycles. Participants stated that their processes of making decisions were more agile, particularly in crucial circumstances. Additionally, ChatGPT's rapid analysis of data and provision of insights have made it not just a tool but an integral system that plays a crucial part in their decision support system processes. Also, a strong emphasis on how ChatGPT automates resurfaced. One participant outlined that ChatGPT implementation in their BPM processes had become a revelation for their workflow automation, acting as a bridge between several components and ensuring a smoother task flow. The efficiency boost helped them to save time and improve the overall reliability of their automated processes. In addition, a participant who was at that time in charge of overseeing technology implementation in their company stated that ChatGPT is a learning system and not just a tool. It is heavily associated with continuous improvement as it can identify patterns, suggest optimizations, and adapt to the changing landscape. They labeled ChatGPT as having a proactive partner in their quest for operational excellence.

4.5.4 Comparison Between ChatGPT and Other BPM Tools in CPM

4.5.4.1 Strengths

The common emerging themes in this section were ease of integration, natural language understanding, adaptability to industry-specific terminology, accuracy in process representation, and user-friendliness. One participant noted that unlike some other tools that needed extensive customization, ChatGPT integration into their existing BPM system was surprisingly smooth as it slotted into their workflow with minimal disruptions. In addition, another notable benefit of ChatGPT over other BPM tools is its remarkable adaptability to industry-specific terminology. The participant added that other BPM tools often struggle to grasp the nuances of their terminology, resulting in inaccuracies in the representation of their processes. The natural language understanding of ChatGPT enhanced their collaboration and communication in the process modeling phase. Other responses are quoted below.

"Precision in our line of duty is a significant aspect. ChatGPT has exhibited an impressive accuracy level in representing complicated processes. While other BPM tools seem to miss crucial details or oversimplify them, ChatGPT has continuously captured the intricacies of our business processes, undoubtedly improving the reliability of our process models." -Business Analyst.

"In our company, there are various team members that have different technical backgrounds and the ChatGPT's user-friendliness has become a game-changer. Compared to other BPM tools that have steep learning curves, the interface of ChatGPT is intuitive. This has enabled us to enhance the efficiency of our teams, enabling even non-technical members to actively engage in the conversational process modeling phase." -Operation Manager.

4.5.4.2 Weaknesses

Despite ChatGPT's strengths over other traditional BPM tools, participants also highlighted several weaknesses related to ChatGPT in CPM. Some of the notable weaknesses were lack of process specificity, limited customization and control, and security concerns. One of the participants acknowledged that while ChatGPT is fantastic for general conversational modeling, it might be limited when it comes to industry-specific processes. According to the participant's sentiments, traditional BPM tools have predefined templates that are in line with their industry standards and the generic approach of ChatGPT can sometimes miss the mark in capturing their processes' intricacies. Another participant highlighted that with ChatGPT, customization could be difficult. And that they could meticulously define each condition and step. ChatGPT is more of a conversation and in some cases, the model can generate outputs that the user did not expect. He added that ChatGPT is only great for creativity, precision could be a challenge. One of the participant's responses concerning ChatGPT's weakness is highlighted below.

"In our company, security is a non-negotiable factor and that is the area I am seeing ChatGPT having problems. I would say that traditional BPM tools are built with layers of security measures that ensure data integrity and compliance. However, ChatGPT, mainly relies on external servers, raising eyebrows, particularly when handling very sensitive processes."

4.5.5 Future Evolution of ChatGPT in BPM and Recommendations Organization Planning to Implement ChatGPT in BPM

Most of the interviewed participants acknowledged that ChatGPT would play a significant role in the future of BPM. Conversational interfaces can enormously improve user experience by offering natural language interactions and with this capability, ChatGPT will be more likely to assist in real-time process optimization through continuous learning. Another participant believed that ChatGPT is more likely to evolve into a key decision-support tool in BPM. Future improvements might incorporate proactive and predictive process suggestions. Therefore, organizations need to establish clear channels of communication between human operators and ChatGPT and prioritize data governance. It was also understood that the evolution of ChatGPT in BPM is more likely to entail more sophisticated integrations with existing tools and that there could be more context-aware conversational models that allow seamless interactions in intricate business processes. A different participant stated that:

"The role of ChatGPT in the future is more likely to expand and go beyond process optimization to become an important tool for innovation and ideation. Companies need to encourage a culture that embraces feedback loops and experimentation when incorporating ChatGPT in BPM." -Business Analyst.

In terms of recommendations to the organizations planning to integrate ChatGPT in BPM, several participants noted that they need to ensure they are careful during the process and make sure that ChatGPT is in line with their specific process. They also need to invest in employee training to harness ChatGPT's full potential. Others stated that organizations with this plan need to pay more attention to robust integration frameworks and data security. Additionally, they should consider investing in a hybrid technique, integrating human oversight with AI-driven conversational interfaces to strike a balance between reliability and efficiency. Other responses from participants are presented below.

"As a Chief Operations Officer, my recommendation for those organizations or companies planning to integrate ChatGPT in BPM would be to perform thorough pilot programs to understand the tweak and influence of the system accordingly. They need to understand that whatever challenges they experience during the implementation stage, with the right procedure, leveraging analytical abilities of ChatGPT can result in more informed decision-making within BPM frameworks." -Chief Operating Officer.

"From my perspective as a business analyst, my recommendation would be to entail end-users in early implementation stages to ensure the conversational model is in line with their needs. Also, these organizations need to invest in scalable infrastructure to accommodate the growing intricacy of conversational models as it is vital for long-term success." -Business Analyst.

4.6 Qualitative Data Analysis (Case Studies)

In this section, the researcher understood that very few case-specific studies have been published concerning ChatGPT integration in BPM processes. Past studies exploring the impacts of ChatGPT on various industries were selected. Case studies were categorized into five groups, including healthcare and medicine, business and finance, law and legal services, sales and marketing, and banking.

4.6.1 Healthcare and Medicine

The findings from this category indicate that ChatGPT can be utilized in the health and medicine sector in facilitating collaboration between healthcare professionals by smoothing information sharing and communication, offering medical advice and information to patients in an easily understandable way, and synthesizing and summarizing medical research to inform evidence-based practice. Ali et al. 's (2023) pilot assessment suggested that ChatGPT can be used to develop a chatbot that aids with patient triage, assisting healthcare professionals in identifying the urgency of a condition of the patient and appropriate course of actions. Another article indicated that ChatGPT could be used in clinical research and development to assess large volumes of clinical data, determining trends and patterns that can be utilized to develop new interventions and treatments (Khan et al., 2023). Also, according to Sallam (2023), it can be leveraged in medical diagnosis and treatment recommendations to develop systems that can help in recommendations on diagnosis and treatment.

4.6.2 Business and Finance

In this industry, the researcher realized that ChatGPT can be utilized in several ways. They include supporting customer service functions by offering quick, accurate, and context-appropriate responses to customer inquiries, assisting in marketing materials and business proposal creation, and generating personalized investment recommendations based on financial goals and individual risk profiles. For instance, George et al. (2023) indicated that ChatGPT can be utilized in customer service chatbots to create chatbots that can help customers with inquiries, process transactions, and offer product recommendations. Other studies identified ChatGPT's capability to create systems that can expose financial crimes and fraud by assessing transaction data and recognizing patterns and trends that may suggest fraudulent activities (Haleem et al., 2023). A real-world example in this case JPMorgan Chase businesses. They have successfully implemented ChatGPT in their business process to detect fraud and create other forms of data-driven value for customers and clients (Crosman, 2023). Also, through the assessment of financial data and the provision of recommendations, ChatGPT can be leveraged in investment management to help investors and businesses make informed investment decisions (Taecharungroj, 2023).

4.6.3 Law and Legal Services

In the law and legal services sector, the researcher noted that ChatGPT can be important in streamlining collaboration and communication between legal professionals through its capability to facilitate information sharing and simplify complex legal jargon. It can be used to assess and predict the outcomes of legal disputes regarding legal precedents and historical data. In addition, ChatGPT can be leveraged to summarize and assess legal documents, including court rulings, legislation, and contracts, and aid professionals in drafting legal documents, such as briefs, pleadings, and contracts (Choi et al., 2023; Oltz, 2023). Other studies, such as Armstrong (2023) and Gandhi and Talwar (2023), highlighted that ChatGPT can be utilized in assisting with due diligence, including performing background checks and reviewing legal documents, and in creating legal advice chatbots that can

help clients with legal inquiries and questions. An example is where a Colombian judge used ChatGPT in ruling (Taylor, 2023).

4.6.4 Sales and Marketing

Various potential ChatGPT applications were noted in this sector. For instance, ChatGPT can be leveraged in sales enablement by offering sales representatives personalized recommendations for closing techniques, objection handling, and product positioning. To be specific, ChatGPT can offer sales representatives with tools they require to close deals more effectively by analyzing data on customer preferences and behavior. In addition, it can be utilized to offer assistance in generating aspects such as advertising copy, email campaigns, and social media posts (Dwivedi et al., 2023). According to other studies, ChatGPT can be used in the creation of customer support chatbots modeled to assist clients with questions, manage transactions, and provide product suggestions, improving the overall customer experience. Also, through its capacity to provide personalized recommendations for products or services which, in turn, helps the business generate leads and enhance their conversion rates (George et al., 2023; Zarifhonarvar, 2023). An example entails Coca-Cola, the soft drink giant forming a partnership with consultant Bain & Company, intending to utilize ChatGPT in marketing and create customer-personalized experiences (Johnston, 2023).

4.6.5 Banking

In the banking sector, ChatGPT can be employed in supporting financial organizations in approaches that reduce risks through identification of possible hazards and analysis of financial information. It can be leveraged in personal finance management by developing tools that can help customers with debt management, savings, and budgeting and enhance their financial health. Dwivedi et al. (2023) indicate that ChatGPT could be leveraged in customer service chatbots by creating chatbots that can help customers with inquiries, process transactions, and offer product recommendations. In addition, it can assist financial institutions in making informed investment decisions due to its capacity to provide recommendations and analyze financial data. Also, ChatGPT is important in the creation of systems capable of recognizing financial misconduct and fraud by assessing transaction data and identifying trends and patterns that could indicate deceitful actions. Due to these benefits, Cocheo (2023) reported Ally Bank was to utilize ChatGPT in their digital banking processes. They were considering exploring it carefully to protect their customers' data.

4.6.6 Challenges

While ChatGPT has shown significant capabilities in doing various tasks, its challenge cannot be assumed. The tool has been found to generate incorrect and misleading information. There are some concerns regarding data security and privacy. It is outlined that ChatGPT can expose confidential data. For instance, Samsung was forced to ban the use of ChatGPT among its employees after a sensitive code leak (Ray, 2023). In addition, ChatGPT can be utilized for impersonating individuals, generating fake news, and spreading misinformation. For example, ChatGPT was found to debunk theories that harm Black patients and answer medical questions with racism making experts worried about how it could result in real-world harm and amplify medical racism forms (Burke & O'Brien, 2023).

4.7 Conclusion

This chapter presented the findings from interviews, surveys, and case studies. It explained the participants' demographic data and they are significant to the research. It also provided some insights acquired from the research process that could be important in answering the research question. The findings presented in this section will be used in the next chapter to discuss the results together with the previous studies to find the answer to the research question.

5 CHAPTER FIVE: CONCLUSION

5.1 Introduction

The overall purpose of this research was to determine the degree to which modern tools, especially ChatGPT, effectively contribute conversational process modeling in business process management (BPM) tools. The findings were based on the analysis of responses from surveys and interviews and information obtained in the case studies.

5.2 Findings and Discussion

5.2.1 Demographic Data

The first section of the questionnaires for both interviews and surveys obtained information on participants' demographics. A total of 10 BPM professionals were interviewed with a 100% response rate. The mean age of participants was 38.5 years (SD=7.74). This implies a moderately diverse age group, which was vital for the researcher to understand how different generations perceive and interact with ChatGPT in the PM context. The participants' mean years of experience was 8.7 years (SD=4.72). This indicates a moderately experienced group, which was beneficial for the researcher to analyze how professionals with different experience levels perceive the ChatGPT integration into BPM processes. Concerning surveys, a total of 45 professionals from various industries were surveyed with a 100% response rate. The mean age of participants was 38.5 years (SD=7.74). This implies a moderately diverse age group, which was vital for the researcher to understand how different generations perceive and interact with ChatGPT in the PM context. The participants' mean years of experience was 8.7 years (SD=4.72). This indicates a moderately experienced group, which was beneficial for the researcher to analyze how professionals with different experience levels perceive the ChatGPT integration into BPM processes. The standard deviation suggests that participants have diverse expertise levels in BPM. In addition, the information concerning participants' highest education level indicated that the majority of interviewed participants (80%) had either a bachelor's degree or a master's degree. This is significant to the research as it means that the participants had enough knowledge.

5.2.2 Benefits of ChatGPT in CPM

The participants highlighted that ChatGPT enabled more intuitive and natural interactions, resulting in increased customer satisfaction. For instance, one participant expressed that ChatGPT had revolutionized their customer support and the natural language processing abilities had made their interactions with clients more personalized and customers consistently appreciated their responsiveness. Also, the implementation of ChatGPT in BPM processes can be a game-changer as it can make conversations feel more human, bringing a personalization level to the organization when engaging with clients. Data from online surveys also suggested that ChatGPT can improve customer interactions. These findings were supported by George et al. (2023), indicating that ChatGPT can be utilized in customer service chatbots to create chatbots that can help customers with inquiries, process transactions, and offer product recommendations. Maderis (2023) highlighted that there are two types of bots: (a) AI chatbots that utilize machine learning or natural language processing (NLP) to understand customer requestion and enhance with every interaction and (b) decision-tree or rule-based chatbots that are easily set up to offer high customer service level as it

responds to questions with predetermined responses. This indicates that ChatGPT can play a significant role in CPM and BPM by enhancing customer interactions to help businesses grow.

In addition, it was realized that ChatGPT can streamline the decision-making process within BPM processes. Findings suggested that ChatGPT's rapid analysis of data and provision of insights have made it not just a tool but an integral system that plays a crucial part in their decision support system processes. According to Liao et al. (2023), the integration of databases and knowledge repositories in ChatGPT improves its roles in CPM. These features enable users to seek relevant information, best practices, or historical data directly within the conversational interface, allowing data-driven decision-making during the process of modeling. The integration furthers the ChatGPT abilities beyond generation, transforming it into a valuable companion for users involved in process modeling tasks. A case study on healthcare and medicine supported this notion by stating that ChatGPT can be utilized in the health and medicine sector in facilitating collaboration between healthcare professionals by smoothening information sharing and communication, offering medical advice and information to patients in an easily understandable way, and synthesizing and summarizing medical research to inform evidence-based practice (Ali et al., 2023).

The study investigated the strengths ChatGPT has over other tools in CPM. The findings highlighted that unlike some other tools that needed extensive customization, ChatGPT integration into their existing BPM system was surprisingly smooth as it slotted into their workflow with minimal disruptions. Also, ChatGPT has a remarkable adaptability to industry-specific terminology compared to other BPM tools as these tools often struggle to grasp the nuances of their terminology, resulting in inaccuracies in the representation of their processes. The interviewed participants highlighted that ChatGPT has exhibited an impressive accuracy level in representing complicated processes. While other BPM tools seem to miss crucial details or oversimplify them, ChatGPT has continuously captured the intricacies of business processes, undoubtedly improving the reliability of process models. In the law and legal services sector, the researcher noted that ChatGPT can be important in streamlining collaboration and communication between legal professionals through its capability to facilitate information sharing and simplify complex legal jargon. It can be used to assess and predict the outcomes of legal disputes regarding legal precedents and historical data. In addition, ChatGPT can be leveraged to summarize and assess legal documents, including court rulings, legislation, and contracts, and aid professionals in drafting legal documents, such as briefs, pleadings, and contracts (Choi et al., 2023; Oltz, 2023). The findings are also supported by Ray & Das (2023) stating that the capability of ChatGPT to interpret and generate natural language queries makes it easier for the user to communicate their requirements and thoughts without having to navigate intricate technical interfaces.

5.2.3 Challenges and Barriers to ChatGPT Implementation in BPM and CPM

The findings indicated that ChatGPT implementation may be experienced with challenges related to customization complexity, organizational adaptation, technical hurdles, and integration complexities. Concerning organizational adaptation, participants noted that the implementation may experience resistance from some of the team members to adapt to the conversational nature of the processes. In the review of the literature, this challenge was recognized to be among the significant aspects that could affect implementation processes. For instance, according to Pereira et al. (2019),

employees may be accustomed to the existing processes, and introducing new tools may disrupt their established routines. This resistance can manifest as reluctance to learn and use the new tools, resulting in a slow rate of adoption. Several sources could lead to this resistance to change among employees. Among them are concerns about job security, perceived loss of control, and fear of the unknown. Also, a lack of involvement in the decision-making process may make employees perceive the changes as imposed other than collaborative, contributing to resistance. The resistance to the adoption of BPM tools can manifest in various ways within organizations. For instance, employees may vocalize concerns, express skepticism, or exhibit passive resistance by avoiding engaging with the new tools.

Technical hurdle was a recurring theme in surveys, interviews, and case studies. Some participants noted that it is difficult to ensure secure compatibility and communication with existing IT infrastructure. Others stated that traditional BPM tools have more strengths in terms of ensuring data security and privacy. The literature review indicates that in some cases, technological hurdles may vary from data migration complexities to compatibility challenges. BPM tools are oftentimes required to operate in collaboration with several enterprise systems, such as enterprise resources planning (ERP) or customer relationship management (CRM) systems. Therefore, ensuring the interoperability between these systems and BPM tools is significant for attaining a broader perspective of organizational processes. In addition, these challenges may be due to the differences in software versions, protocols of communication, and data formats, resulting in compromised data integrity and disruptions of workflow in an organization (Imanipour et al., 2012).

In addition, integration challenges may entail issues related to aligning the ChatGPT implementation process with organizational goals. In this case, alignment entails a careful examination of how a BPM tool can contribute to KPIs and support the organization's overall vision and mission (Rosemann & vom Brocke, 2010). These challenges can be averted through a collaborative approach between business and IT stakeholders to describe how a BPM tool will improve processes and contribute to attaining the strategic objectives of the organization. In addition, top-level executives play a crucial part in setting organizational goals and directions. Therefore, their understanding and endorsement of a BPM tool are significant in securing needed resources, both in terms of personnel and budget.

5.2.4 Strategies That Can Be Used to Ensure Successful ChatGPT Implementation in BPM and CPM

It is acknowledged that ChatGPT would play a significant role in the future of BPM. Conversational interfaces of ChatGPT will enormously improve user experience by offering natural language interactions and with this capability can assist in real-time process optimization through continuous learning. Therefore, the researcher investigated some of the strategies that could be utilized to ensure successful ChatGPT implementation in BPM processes. Participants noted that organizations seeking to implement ChatGPT should ensure they are careful during the process and make sure that ChatGPT is in line with their specific process. They also need to invest in employee training to harness ChatGPT's full potential. This will ensure that employees are aware of the influence of ChatGPT in their workflow, minimizing concerns about job security, perceived loss of control, and fear of the unknown. Also, organizations with this plan need to pay more attention to robust integration frameworks and data security. Data security has been discussed as one of the

major issues regarding ChatGPT implementation into BPM processes. Security issues forced Samsung to ban the use of ChatGPT among its employees after a sensitive code leak (Ray, 2023). Additionally, they should consider investing in a hybrid technique, integrating human oversight with AI-driven conversational interfaces to strike a balance between reliability and efficiency.

5.3 Conclusion and Future Recommendation

5.3.1 Discussions and Conclusions

This research explored the role and influence of modern tools, particularly ChatGPT in BPM, uncovering valuable insights through a mixed-method approach entailing case studies, surveys, and interviews. The research noted that despite ChatGPT's potential such as improved customer interactions and streamlined decision-making processes, its integration into BPM systems may be faced with challenges related to technical hurdles, integration complexities, organizational adaptation, and customization complexities. Therefore, for successful implementation, the study notes that it is significant for organizations to use a hybrid approach, combining AI abilities with human oversight to maintain the delicate balance between reliability and efficiency in the BPM process. Also, the research outlines the crucial role of employee training and engaging end-users in the early stages of ChatGPT implementation.

Over the years, business process management (BPM) tools have greatly transformed and changed into modern BPM tools; unlike traditional tools, these modern tools integrate latest advanced technologies to simplify processes, heighten efficiency, and drive organizational value (Beerepoot et al., 2023; Zuhaira & Ahmad, 2020; Toufah et al., 2020). Some modern BPM instruments comprise Robotic Process Automation (RPA) to automate repetitive, rules-based tasks; Low-Code and No-Code Platforms that enable collaborative app building between business and IT; Cloud-Based BPM Solutions providing flexibility and accessibility; Artificial Intelligence (AI) and Machine Learning (ML) for intelligent automation and data-driven decisions; and Blockchain Technology for bolstered transparency, security, and data integrity (Reijers, 2021; Beerepoot et al., 2023; Zuhaira & Ahmad, 2020; Toufah et al., 2020). Compared to these tools, conversational AI like ChatGPT uniquely benefits BPM, especially conversational process modeling, through its natural language processing skills. Evidence shows that compared to non-conversation BPM tools, ChatGPT facilitates intuitive BPM system interactions, rendering process modeling more accessible across various stakeholders (Roumeliotis & Tselikas, 2023; Menon & Shilpa, 2023). Additionally, its capacity to comprehend requests and provide human-like responses streamlines communication and collaboration within BPM frameworks (Funk et al., 2024; Sliż, 2024).

The findings of the current study corroborates these previous evidence on conversational AI particularly ChatGPT. As per the findings of this current study, ChatGPT and comparable conversational AI technologies offer unique benefits in BPM with a majority of the participants reporting that ChatGPT supports CPM very effectively in their BPM tools; the study reveals that ChatGPT's natural language processing capabilities enable more intuitive and natural interactions, improving customer satisfaction. Its capacity to comprehend requests and provide human-like responses smooths communication and teamwork within BPM systems, rendering process modeling more accessible to diverse stakeholders. The research also highlights ChatGPT's strengths compared to other BPM tools; these strengths include smooth integration, adaptability to industry-specific

terminology, and user-friendliness. These advantages contribute to improved process efficiency and enhanced decision-making processes within organizations. However, the study also uncovers several challenges associated with ChatGPT integration in BPM. These challenges include customization complexity, organizational adaptation issues, technical hurdles, integration complexities, data privacy and security concerns, alignment with organizational goals, and employee training and change management. Table 3 provides a comprehensive overview of the benefits and challenges associated with ChatGPT integration in BPM, as identified in the current research.

Benefits	Challenges
Enhanced customer interactions	Customization complexity
Streamlined decision-making processes	Organizational adaptation
Improved process efficiency	Technical hurdles
Increased accessibility and collaboration	Integration complexities
Adaptability to industry terminology	Data privacy and security concerns
User-friendly interface	Alignment with organizational goals
Real-time process optimization	Employee training and change management

Table 3 Benefits and Challenges of ChatGPT Integration in BPM

The study emphasizes the need for organizations to carefully navigate these challenges to ensure successful ChatGPT implementation. Participants in the research recommend establishing clear communication channels, prioritizing data governance, and adopting a hybrid approach that combines human oversight with AI-driven conversational interfaces. Looking towards the future, the study participants anticipate that ChatGPT will play a pivotal role in the evolution of BPM, not only as a process optimization tool but also as a significant decision support mechanism. They foresee the development of more sophisticated integrations, context-aware conversational models, and the potential for ChatGPT to drive innovation and ideation within BPM frameworks.

Overall, while ChatGPT offers significant advantages in terms of natural language interaction, accessibility, and collaboration, organizations must carefully navigate the challenges associated with its integration. Addressing concerns related to customization, organizational adaptation, technical compatibility, data security, and employee training is crucial for successful implementation. Compared to other modern BPM tools, ChatGPT stands out for its conversational capabilities and potential to democratize process modeling. However, it may lack the process-specific depth and customization options offered by specialized BPM tools. Organizations should evaluate their specific requirements and consider a hybrid approach, leveraging the strengths of both ChatGPT and other modern BPM tools to optimize their processes and drive business value. As the BPM landscape continues to evolve, the integration of conversational AI technologies like ChatGPT will play an increasingly important role in shaping the future of process management. By harnessing the power of natural language interaction and combining it with the robustness of modern BPM tools, organizations can unlock new levels of efficiency, collaboration, and innovation in their business processes.

This research makes worthwhile contributions to comprehending the role and influence of modern tools, particularly ChatGPT, in BPM; by adopting a mixed-methods approach, the scientific investigation offers a comprehensive exploration of the benefits, challenges, and strategies associated with ChatGPT application. The triangulation of quantitative and qualitative findings strengthens the reliability and validity of the results; however, the rapidly changing AI landscape and industry-specific nuances characterize notable limitations to the generalizability of the findings. The practical implications of this research are substantial; organizations or any stakeholders considering ChatGPT adoption can benefit from the insights provided, such as the criticality of establishing scalable infrastructure, involving end-users in early implementation stages, and investing in employee training. Nevertheless, the findings also emphasize the need for proactive risk assessments, robust security measures, and a user-centric design approach. Future research should employ longitudinal approaches to assess the long-term influence of ChatGPT on BPM processes. Additionally, collaborative research initiatives between technology developers, academic institutions, and industry stakeholders can contribute to a shared knowledge pool and best practices for effective ChatGPT integration. As organizations navigate the challenges of BPM tool adoption, the findings of this study provide actionable recommendations for sustainable and successful incorporation of ChatGPT in BPM frameworks.

5.3.2 Future Recommendations

ChatGPT is expected to evolve, therefore organizations need to pay much focus on a culture of continuous adaptation and learning. This entails encouraging an environment that promotes feedback loops and experimentation, offering regular training, and staying abreast of technological advancements. Additionally, given the concerns of data security, ChatGPT implementation in BPM needs to integrate enhanced measures such as proactive risk assessments, regular security audits, and robust encryption protocols to avert vulnerabilities. The significance of entailing end-users in the early stages of integrating ChatGPT in BPM suggests the need for a user-centric approach. In this case, organizations planning to implement ChatGPT in their BPM systems should invest heavily in iterative design processes, usability testing, and user feedback mechanisms to make sure that the tool is in line with user needs. Also, the AI landscape in BPM is rapidly evolving, requiring collaborative research initiatives between technology developers, academic institutions, and industry stakeholders. These practices can contribute to a shared knowledge pool, best guidelines, and initiatives for the effective integration of ChatGPT into BPM processes.

Future academic researchers should evaluate on the use of ChatGPT for business modelers and explore a method in enhancing its contextual comprehension, refining response accuracy, and incorporating real-time data updates. Finally, scholars should investigate methods to integrate domain specific knowledge that could further optimize more advantage for business professionals using process modelling tools.

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6 APPENDICES

6.1 Appendix A: Interview Questionnaire

Section A: Participant Information

- 1. Kindly, fill in the following questions appropriately.
 - i. Age.....
 - ii. Highest level of education achieved
 - iii. Your current position.....
 - iv. Sector.....
 - v. Years of Experience in BPM (Business Process Management)

Section B: General BPM and ChatGPT Usage

1. Please, provide you general overview of your experience with BPM tools.

.....

.....

2. Have you ever used conversational interfaces, such as ChatGPT, in your BPM process

Yes No

If **yes**, please describe the context.

.....

Section C: ChatGPT and Conversational Process Modeling (CPM)

1. How do you perceive ChatGPT's role in conversational process modeling within the BPM context?

2. In your opinion, what benefits does ChatGPT bring to the modeling process and managing business processes?
3. Have you ever experienced any limitations or issues in utilizing ChatGPT for conversational process modeling?

Yes No

If yes ,	please	elaborate
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Section D: Implementation and Integration

1. Please, share some experiences with ChatGPT's implementation in your BPM processes.

2. Were there any specific obstacles or challenges experienced during ChatGPT integration into existing BPM tools or workflows?

Yes No (a) If **yes**, please mention the challenges or obstacles.

.....

.....

.....

(b) How did your organization or team address these obstacles or challenges during the implementation phase?

.....

Section E: Comparison with Other Tools

1. In your experience, could you please explain the way ChatGPT compares to other BPM tools in terms of supporting conversational process modeling?

.....

2. Have you ever observed any specific weaknesses or strengths in ChatGPT in comparison to traditional BPM tools?

Yes No

If **yes**, mention them

Weaknesses

Charl		
Stre	engths	
Stro	engths	
Stro	engths	
	engths	

Section F: Impact Assessment

1. What measurable impact (either positive or negative) has ChatGPT had on the effectiveness and efficiency of your BPM processes?

Positive Impacts

Negative Impacts

......

2. Has ChatGPT ever played a crucial role in enhancing your business processes?

Yes

If **yes**, please, please share those instances

No

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.....

Section E: Future Outlook and Recommendations

1. How do you oversee ChatGPT's role evolving in the BPM context in the future

.....

2. Based on your experiences, what recommendation would you provide to organizations considering ChatGPT's adoption in their BPM strategies?

.....

Section F: Additional Comments

1. Is there any additional insights or information that you would like to share concerning ChatGPT's use in BPM processes?

Yes No If **yes**, please share them here.

Thank you for taking the time to participate in this interview. We appreciate your efforts. Your information will be kept anonymous and confidential.

6.2 Appendix B: Survey Questionnaire

Section A: Respondent Information

1. Kindly, fill in the following questions appropriately.

i.	Age
ii.	Highest level of education achieved
iii.	Your current position
iv.	Sector
v.	Years of Experience in BPM (Business Process Management)

Section B: BPM Tool Usage

(a) Current BPM Tools

1. Which BPM tools are currently used in your organization?

.....

.....

 On a scale of 1 to 5 (1-not al all satisfied, 2-partly satisfied, 3-satisfied, 4-more than satisfied, 5-very satisfied) how satisfied are you with your current BPM tools?

.....

(b) Awareness of Conversational Interfaces

1. Are you familiar with conversation interfaces in the BPM context?

Yes No

If **yes**, please specify the technologies or tools that you are aware of.

······

Section C: Implementation of ChatGPT

(a) ChatGPT Usage

1. Have you ever considered or implemented ChatGPT or similar conversational interfaces in your BPM processes?

Yes No

If **yes**, please explain

.....

.....

.....

(b) Motivation for Implementation

1.	What motivated the consideration or implementation of $\ensuremath{ChatGPT}$ in your \ensuremath{BPM}
	processes?

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Section D: Benefits and Challenges

(a) Benefits

1. In your opinion, what are the main benefits of integrating ChatGPT in BPM?

.....

.....

.....

(b) Challenges

1. What challenges, if any, did you experience during the ChatGPT implementation in your BPM processes?

How were these challenges addressed?

Section E: Conversational Process Modeling

1. How do you perceive ChatGPT's role in conversational process modeling within BPM?

.....

-
- On a scale of 1 to 5 (1-very ineffective, 2-partly ineffective, 3-effective, 4-partly effective, 5-very effective), how effective do you find ChatGPT in supporting conversational process modeling?

.....

Section F: Future Considerations

1. Are there plans to expand or modify ChatGPT's use in your BPM initiatives?

Yes No If **yes**, please elaborate them.

Section G: Additional Comments

Open Ended Questions

1. What additional insights or comments do you have concerning ChatGPT's use in BPM?

2. Is there anything else you would like to share regarding your experience with BPM tools and conversational interfaces/

.....

Thank you for taking the time to participate in this interview. We appreciate your efforts. Your information will be kept anonymous and confidential.