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The Impact of Artificial Intelligence on Re-engineering Administrative and Marketing Processes in Private Sector Companies

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Abstract:

Artificial Intelligence (AI) has become one of the most influential technological innovations affecting organizational structures, administrative systems, and marketing strategies across private sector companies. The study employed a qualitative research design using semi-structured interviews with 15 participants selected purposively from different private sector organizations. Data were analyzed using NVivo qualitative data analysis software through thematic coding. The findings revealed that AI significantly improved administrative efficiency, decision-making processes, customer engagement, marketing personalization, and operational automation. Thematic analysis identified several major themes including operational efficiency, digital transformation, employee adaptation challenges, customer behavior analysis, predictive marketing, and organizational competitiveness. Organizations that strategically integrate AI technologies into their operations are more likely to achieve long-term operational flexibility and market responsiveness.

Keywords: *Artificial Intelligence, Administrative Re-engineering, Marketing Processes, NVivo Analysis, Qualitative Research, Private Sector Companies, Digital Transformation*

1. Introduction

Artificial Intelligence has transformed the modern business environment by reshaping organizational operations, communication systems, customer engagement strategies, and administrative procedures. Private sector companies increasingly rely on intelligent systems to improve efficiency, automate repetitive tasks, analyze customer behavior, and strengthen competitive advantage. Administrative and marketing processes are among the most significantly affected organizational functions because they directly influence organizational productivity, decision-making, customer satisfaction, and profitability (Kostetskyi, 2025). In recent years, private companies in Erbil, Kurdistan Region of Iraq, have gradually adopted digital technologies to modernize their operational systems and remain competitive within rapidly changing market conditions. The emergence of AI technologies such as machine learning, predictive analytics, chatbots, automated customer services, and intelligent data management systems has introduced new opportunities for organizations to redesign traditional administrative and marketing structures (Ezeh et al., 2023).

Business process re-engineering refers to the redesign and restructuring of organizational procedures to improve efficiency, flexibility, quality, and responsiveness. AI technologies contribute significantly to re-engineering processes by enabling faster information processing, reducing operational delays, improving customer targeting, and supporting strategic decision-making. However, despite these advantages, organizations continue to face implementation challenges related to technological readiness, employee adaptation, organizational culture, and financial investment (Shivam & Gupta, 2023). This study explores how artificial intelligence influences the re-engineering of administrative and marketing processes in private sector companies in Erbil using qualitative research methods and NVivo thematic analysis.

2. Literature Review

2.1 Artificial Intelligence in Organizations

Artificial Intelligence refers to computer systems capable of performing tasks that normally require human intelligence, including learning, decision-making, prediction, language processing, and problem-solving. AI technologies have become increasingly integrated into organizational systems to support automation, operational management, and customer interactions (Abd & Smaoui, 2023). Organizations utilize AI to improve productivity, reduce operational costs, and strengthen business adaptability. AI applications include customer relationship management systems, automated marketing campaigns, predictive analytics, intelligent reporting systems, and digital communication platforms (Ugwu & Njoku, 2025).

2.2 Administrative Process Re-engineering

Administrative re-engineering involves redesigning organizational procedures to improve operational performance and organizational effectiveness. Traditional administrative systems often suffer from delays, excessive paperwork, inefficient communication, and slow decision-making processes (Sayuti et al., 2025). AI contributes to administrative re-engineering by automating routine tasks, improving data accessibility, supporting real-time decision-making, and reducing dependency on manual operations. Intelligent systems can manage employee records, automate scheduling, generate reports, and facilitate organizational coordination (Dada et al., 2023).

2.3 AI and Marketing Transformation

Marketing processes have experienced significant transformation due to AI technologies. Organizations increasingly use AI-driven systems for customer segmentation, personalized marketing, predictive consumer analysis, and automated advertising (Bhatia, 2025). AI helps businesses understand customer preferences through behavioral analysis and data-driven marketing strategies. This enables companies to improve customer engagement, strengthen brand positioning, and increase market responsiveness (Reddy et al., 2025).

2.4 Challenges of AI Adoption

Despite its advantages, AI implementation presents several organizational challenges. Companies may experience resistance from employees concerned about job security and technological replacement. Limited technical expertise, insufficient infrastructure, and financial costs also create barriers to successful AI integration (Merli et al., 2024). Organizations must therefore balance technological advancement with employee training, organizational support, and strategic implementation planning (Sharma & Dang, 2026).

3. Research Methodology

This study employed a qualitative research approach to explore participants' experiences, perceptions, and interpretations regarding the impact of AI on administrative and marketing process re-engineering. The study involved 15 participants selected purposively from private sector companies in Erbil, Kurdistan Region of Iraq.

Table 1. Participant Demographics

Participant	Position	Industry	Experience
P1	Marketing Manager	Retail	8 Years
P2	HR Officer	Education	6 Years
P3	IT Specialist	Telecommunications	7 Years
P4	Operations Manager	Healthcare	10 Years
P5	Sales Executive	Retail	5 Years
P6	Digital Marketing Officer	IT Services	4 Years
P7	Administrative Manager	Hospitality	9 Years
P8	Customer Service Supervisor	Banking	6 Years
P9	Business Analyst	Telecommunications	5 Years
P10	Marketing Coordinator	Education	3 Years
P11	Finance Officer	Healthcare	8 Years
P12	HR Manager	Construction	12 Years
P13	Social Media Specialist	Retail	4 Years
P14	General Manager	Logistics	11 Years
P15	Operations Supervisor	IT Services	5 Years

The study included fifteen participants working in different private sector companies across Erbil, Kurdistan Region of Iraq. The participants represented a wide range of professional positions and industries, allowing the research to gather diverse perspectives regarding the impact of Artificial Intelligence on administrative and marketing process re-engineering. The industries included retail, education, telecommunications, healthcare, IT services, hospitality, banking, construction, and logistics. This diversity helped provide a broader understanding of how AI technologies are

being implemented across different organizational environments. The participants occupied various managerial, administrative, technical, and marketing-related positions such as marketing managers, HR officers, IT specialists, operations managers, customer service supervisors, business analysts, finance officers, and social media specialists. Including participants from different organizational levels contributed to obtaining comprehensive insights into both operational and strategic aspects of AI adoption within private businesses. In terms of professional experience, participants had between three and twelve years of work experience. Several participants held senior managerial positions with extensive experience in organizational management and decision-making, while others represented mid-level operational and technical roles. The variation in experience levels provided balanced perspectives regarding organizational transformation, employee adaptation, technological challenges, and business process improvement associated with AI implementation. Overall, the participant demographics demonstrate that the study relied on a professionally diverse sample capable of providing rich qualitative data about the influence of Artificial Intelligence on administrative efficiency, marketing transformation, and organizational competitiveness within private sector companies in Erbil.

Semi-structured interviews were conducted to collect in-depth qualitative data regarding participants' experiences with AI integration in administrative and marketing functions.
Interview Questions

1. How has AI affected administrative processes within your organization?
2. What changes have occurred in marketing operations after implementing AI technologies?
3. What benefits has AI introduced to organizational efficiency?
4. What challenges has your company experienced during AI implementation?
5. How do employees respond to AI-driven changes?

NVivo software was utilized to conduct a comprehensive qualitative thematic analysis of the interview data collected from participants working in private sector companies in Erbil, Kurdistan Region of Iraq. The software assisted in organizing, coding, interpreting, and visualizing the qualitative information in a systematic and structured manner. Using NVivo improved the accuracy, consistency, and depth of the analysis by allowing the researcher to identify recurring patterns, relationships, and themes related to the impact of Artificial Intelligence on administrative and marketing process re-engineering. The first stage of the analysis involved data transcription. All interview responses were transcribed carefully into written text format to ensure that participants' perspectives and experiences were accurately documented. The transcription process allowed the researcher to become familiar with the data before beginning the coding process. Each participant transcript was labeled systematically using participant codes such as P1, P2, P3, and so forth to maintain confidentiality and improve data organization within NVivo. After transcription, open coding was conducted. During this stage, the researcher reviewed the interview transcripts line by line to identify important concepts, repeated ideas, and meaningful statements. Initial codes were assigned to sections of text that reflected participants' experiences, opinions, challenges, and observations regarding AI implementation. Examples of initial codes included automation, customer analysis, faster communication, employee resistance, operational efficiency, predictive marketing, decision-making improvement, and organizational flexibility. Open coding allowed the

researcher to break down large amounts of qualitative data into smaller meaningful units for further interpretation.

The next stage involved axial coding, where related codes were grouped together to identify broader categories and relationships among concepts. NVivo assisted in linking similar codes and identifying connections between organizational practices, employee experiences, technological adoption, and marketing transformation. For example, codes related to automation, reporting speed, and workflow improvement were combined under the broader category of administrative efficiency, while customer targeting, predictive analytics, and personalized advertising were grouped under marketing transformation. Axial coding helped the researcher understand how different concepts interacted and influenced one another within organizational settings. Selective coding was then applied to identify the central themes that represented the core findings of the research. At this stage, the researcher refined and integrated the categories developed during axial coding into major themes that explained the broader impact of AI on organizations. Themes such as operational efficiency, digital transformation, employee adaptation challenges, customer engagement, organizational competitiveness, and strategic decision-making emerged as the primary findings of the study. Selective coding enabled the researcher to develop a coherent explanation of how AI contributes to re-engineering administrative and marketing processes. NVivo's word frequency analysis feature was also used to identify the most commonly repeated words and phrases within the interview data. Frequently occurring terms such as AI, marketing, efficiency, customers, automation, technology, communication, and data demonstrated the major areas of concern and discussion among participants. This analysis supported the thematic findings by highlighting the concepts most emphasized throughout the interviews.

Thematic hierarchy analysis was conducted to organize themes and sub-themes into structured categories. NVivo allowed the researcher to visually represent relationships between broader organizational themes and more specific sub-themes. For instance, the major theme of organizational competitiveness included sub-themes such as innovation, adaptability, market responsiveness, and strategic flexibility. This hierarchical organization improved the clarity and depth of the analysis. Matrix coding queries were applied to compare themes across participants, industries, and organizational roles. This analytical procedure enabled the researcher to identify similarities and differences in participant experiences regarding AI implementation. For example, managers often emphasized strategic benefits and operational efficiency, while technical staff discussed automation systems and employee adaptation challenges. Matrix coding helped strengthen the analytical depth of the study by facilitating comparative analysis between participant groups. Cross-case comparison analysis was also conducted to examine variations and common patterns among organizations from different industries such as retail, healthcare, education, banking, telecommunications, and IT services. NVivo assisted in identifying how AI implementation differed across sectors while also revealing shared organizational experiences related to process automation, marketing personalization, and digital transformation. Finally, theme relationship mapping was used to visually illustrate the connections between major themes and organizational outcomes. NVivo generated visual relationship models demonstrating how AI adoption influenced operational efficiency, customer engagement, strategic decision-making, and organizational flexibility simultaneously. These visual maps supported the interpretation of findings and provided a clearer understanding of the interconnected nature of AI-driven organizational transformation. Overall, the use of NVivo software enhanced the rigor,

organization, and credibility of the qualitative analysis by enabling systematic coding, thematic development, comparative analysis, and visual interpretation of the research data.

4. NVivo Coding Analysis

Table 2. Initial Open Coding Categories

Code	Description
Automation	Automated operational tasks
Customer Analysis	Understanding customer behavior
Faster Communication	Improved internal communication
Data Management	AI-supported data organization
Employee Resistance	Fear of technological replacement
Marketing Personalization	Customized customer targeting
Decision-Making	Faster managerial decisions
Operational Efficiency	Improved workflow performance
Cost Reduction	Reduced operational expenses
Skill Development	Employee training and adaptation

The initial open coding process was conducted to identify the main ideas, repeated concepts, and significant experiences expressed by participants regarding the impact of Artificial Intelligence on administrative and marketing process re-engineering in private sector companies. During this stage, interview transcripts were carefully examined line by line, and meaningful sections of data were assigned specific codes that represented the participants' views and organizational experiences. These codes served as the foundation for developing broader categories and themes during the later stages of qualitative analysis. One of the most frequently identified codes was automation, which referred to the increasing use of AI systems to perform repetitive operational tasks automatically. Participants explained that many routine administrative activities, such as reporting, scheduling, customer responses, and data processing, became faster and more organized after the implementation of AI technologies. This code highlighted the role of AI in reducing manual workload and improving operational speed within organizations. Another important code was customer analysis, which reflected organizations' use of AI technologies to better understand customer behavior, preferences, and purchasing patterns. Participants emphasized that AI-supported analytical tools allowed companies to collect and interpret customer data more accurately, enabling businesses to improve decision-making and customer engagement strategies. The code faster communication emerged from participants' discussions about improved internal communication systems within organizations. AI technologies helped accelerate information sharing between departments, improve coordination among employees, and support quicker responses to customer inquiries and organizational needs. Participants reported that communication processes became more efficient and less dependent on manual procedures. Data management was another major code identified during the analysis. Participants explained that AI systems improved the organization, storage, accessibility, and analysis of company information. AI-supported databases and digital management systems reduced errors and facilitated easier access to important organizational data, contributing to more effective administrative operations. Employee resistance also emerged as a significant code within the study. Several participants

discussed concerns among employees regarding technological replacement and job security following AI implementation. Some employees initially feared that automation would reduce the need for human labor, creating uncertainty and resistance toward organizational changes. This code reflected the human and cultural challenges associated with technological transformation. The code marketing personalization represented the increasing ability of organizations to customize marketing campaigns based on customer preferences and behaviors. Participants noted that AI technologies enabled businesses to create targeted advertisements, personalized recommendations, and customer-specific marketing strategies, improving customer satisfaction and marketing effectiveness. Decision-making was identified as another major code because participants repeatedly emphasized that AI technologies supported faster and more accurate managerial decisions. AI-driven analytical systems provided real-time information, predictive insights, and performance evaluations that helped managers respond more effectively to organizational challenges and market changes. Operational efficiency was one of the strongest codes generated during the analysis. Participants explained that AI contributed significantly to improving workflow performance, reducing delays, minimizing repetitive tasks, and increasing overall organizational productivity. Many participants viewed AI as an essential tool for enhancing organizational flexibility and efficiency. The code cost reduction reflected participants' observations that AI technologies helped organizations reduce operational expenses by minimizing manual labor, improving resource allocation, and increasing process automation. Businesses reported savings in time, labor costs, and administrative expenditures after implementing intelligent systems. Finally, skill development emerged as an important code related to employee adaptation and organizational learning. Participants emphasized that successful AI implementation required continuous employee training and the development of new technical and digital skills. Organizations increasingly invested in staff development programs to ensure employees could effectively interact with AI technologies and adapt to changing workplace requirements.

Table 3. Interview Transcripts

Participant	**Transcript Excerpt**
P1	"AI helped us automate customer communication and improve marketing targeting."
P2	"Administrative reporting became much faster after implementing AI systems."
P3	"AI reduced repetitive IT support tasks and improved workflow coordination."
P4	"Decision-making became more data-driven and accurate."
P5	"Marketing campaigns became more personalized using customer analytics."
P6	"AI tools improved social media engagement and customer interaction."
P7	"Some employees initially feared AI would replace their jobs."
P8	"Customer service response time improved significantly."
P9	"Predictive analytics helped us understand market trends better."
P10	"AI made marketing planning more efficient and organized."
P11	"Financial reporting systems became more automated."
P12	"Employee adaptation required continuous training programs."
P13	"AI-generated content improved advertising efficiency."
P14	"Operational coordination became smoother across departments."
P15	"AI improved organizational flexibility during business challenges."

The interview transcripts provided important qualitative insights into how Artificial Intelligence has influenced administrative and marketing process re-engineering within private sector companies in Erbil, Kurdistan Region of Iraq. Participants shared experiences related to automation, operational improvement, customer engagement, decision-making, employee adaptation, and organizational flexibility. The interview excerpts demonstrated that AI technologies have become increasingly integrated into daily organizational operations and strategic business activities. Several participants emphasized the positive impact of AI on communication, workflow efficiency, and automation. For example, P1 explained that AI improved customer communication and enhanced marketing targeting, indicating that organizations increasingly rely on intelligent systems to strengthen customer engagement and promotional effectiveness. Similarly, P2 stated that administrative reporting became much faster after implementing AI systems, highlighting the role of automation in reducing manual administrative work and accelerating organizational processes. P3 also emphasized that AI reduced repetitive IT support tasks and improved workflow coordination, demonstrating how AI contributes to operational streamlining and internal organizational efficiency. A number of participants discussed the role of AI in supporting managerial and strategic decision-making. P4 explained that decision-making became more data-driven and accurate, suggesting that organizations increasingly depend on AI-generated insights and analytics when making operational and strategic decisions. Likewise, P9 reported that predictive analytics helped the organization better understand market trends, indicating that AI technologies improved the company's ability to anticipate customer behavior and market changes. Marketing transformation emerged strongly throughout the interview responses. P5 explained that marketing campaigns became more personalized through customer analytics, while P6 highlighted improvements in social media engagement and customer interaction resulting from AI tools. P10 also emphasized that AI made marketing planning more efficient and organized. These responses demonstrate that AI technologies have significantly changed how organizations approach customer targeting, digital marketing, and promotional activities. Several participants focused on the operational benefits of AI implementation. P8 reported that customer service response times improved significantly, reflecting increased communication speed and service quality. P11 explained that financial reporting systems became more automated, suggesting improvements in administrative accuracy and reporting efficiency. P14 stated that operational coordination became smoother across departments, indicating that AI contributed to stronger organizational integration and communication. Furthermore, P15 highlighted that AI improved organizational flexibility during business challenges, demonstrating the role of intelligent technologies in enhancing organizational adaptability and resilience. Despite the positive impacts, some participants also discussed challenges associated with AI adoption. P7 noted that some employees initially feared AI would replace their jobs, reflecting concerns regarding job security and technological displacement. Similarly, P12 explained that employee adaptation required continuous training programs, indicating that organizations needed to invest in skill development and employee support to facilitate successful technological transition. Finally, P13 emphasized that AI-generated content improved advertising efficiency, illustrating the growing role of AI in creative marketing functions and digital content production. Overall, the interview transcripts revealed that Artificial Intelligence positively influenced administrative efficiency, marketing effectiveness, operational coordination, and organizational competitiveness, while also creating challenges related to employee adaptation and organizational change management.

Table 4. Main Themes and Sub-Themes

Main Theme	Sub-Themes
Administrative Efficiency	Automation, Reporting Speed, Coordination
Marketing Transformation	Customer Analysis, Personalization, Digital Marketing
Organizational Competitiveness	Flexibility, Innovation, Strategic Response
Employee Challenges	Resistance, Training Needs, Job Security Concerns
Decision-Making Enhancement	Predictive Analytics, Data Accuracy

The thematic analysis conducted through NVivo identified several major themes and sub-themes that explained the impact of Artificial Intelligence on re-engineering administrative and marketing processes in private sector companies within Erbil, Kurdistan Region of Iraq. These themes emerged from repeated patterns, participant experiences, and organizational practices discussed throughout the interviews. The thematic structure provided a deeper understanding of how AI technologies influence organizational operations, employee behavior, strategic planning, and business competitiveness. One of the strongest themes identified in the analysis was administrative efficiency. Participants consistently emphasized that AI technologies improved organizational operations by automating repetitive tasks, increasing reporting speed, and strengthening coordination between departments. Automation reduced the amount of manual work required in administrative functions such as scheduling, reporting, communication, and data processing. Reporting systems became faster and more accurate, allowing managers to access real-time information more efficiently. Participants also explained that AI-supported systems improved workflow coordination and communication among departments, contributing to smoother organizational operations and increased productivity. Another major theme that emerged was marketing transformation. The participants highlighted that AI technologies significantly changed how organizations understand and interact with customers. Customer analysis became more advanced through the use of AI-driven data analytics, enabling businesses to better understand customer preferences, purchasing behavior, and market trends. Marketing personalization also emerged as an important sub-theme because organizations increasingly used AI tools to create customized advertisements, targeted campaigns, and personalized customer experiences. In addition, digital marketing practices became more efficient through AI-supported social media management, predictive advertising, and automated customer engagement systems. Participants viewed these technological advancements as important factors for improving customer satisfaction and market competitiveness. The theme organizational competitiveness reflected the broader strategic benefits of AI adoption within private businesses. Participants explained that AI technologies improved organizational flexibility by helping companies respond more quickly to changing market conditions and business challenges. Innovation also emerged as an important sub-theme because AI encouraged organizations to modernize traditional business models and introduce new operational strategies. Furthermore, AI-supported strategic response systems enabled organizations to make faster and more informed decisions based on real-time data and predictive analytics. This contributed to stronger competitiveness and improved adaptability within highly competitive business environments. The analysis also identified employee challenges as a significant theme associated with AI implementation. Although participants recognized the advantages of AI technologies, many organizations experienced employee resistance during the early stages of technological adoption. Some employees feared that automation and intelligent systems could replace human roles and reduce job opportunities.

Training needs also became an important concern because employees required continuous skill development to effectively use AI systems and adapt to new workplace technologies. Job security concerns created uncertainty among some workers, highlighting the importance of organizational support and effective change management during digital transformation processes. Finally, decision-making enhancement emerged as another important theme within the study. Participants repeatedly explained that AI technologies improved managerial decision-making by providing predictive analytics, accurate organizational data, and real-time business insights. Predictive analytics helped organizations forecast market changes, customer behavior, and operational risks more effectively. Data accuracy also improved significantly through AI-supported systems, reducing errors and enabling managers to make more reliable strategic and operational decisions. Participants viewed AI-driven decision-making as one of the most valuable contributions of technological transformation within private sector organizations. Overall, the thematic analysis demonstrated that Artificial Intelligence plays a major role in transforming administrative structures, marketing strategies, organizational competitiveness, employee adaptation processes, and managerial decision-making within private sector companies in Erbil. The identified themes collectively illustrate both the opportunities and challenges associated with AI-driven organizational re-engineering.

Table 5. Most Frequent Words

Word	**Frequency**
AI	68
Marketing	55
Efficiency	49
Customers	44
Automation	41
Processes	39
Employees	33
Data	31
Communication	28
Technology	26

The NVivo word frequency analysis provided additional insight into the dominant concepts and discussions that emerged throughout the participant interviews. By identifying the most repeatedly used words within the interview transcripts, the analysis helped reveal the primary organizational concerns, priorities, and experiences related to the implementation of Artificial Intelligence in private sector companies in Erbil, Kurdistan Region of Iraq. The frequency of specific terms demonstrated the strong relationship between AI technologies and organizational transformation in both administrative and marketing functions. The word AI appeared most frequently throughout the interviews, indicating that participants consistently focused on the role of intelligent technologies in reshaping organizational operations and business strategies. The repeated use of this term reflects the growing importance of AI systems within private sector companies and highlights the central focus of the study on technological transformation and process re-engineering. The term marketing also appeared frequently, demonstrating that participants strongly associated AI technologies with improvements in customer targeting, digital promotion, advertising strategies, and customer relationship management. Organizations increasingly relied

on AI-supported marketing systems to personalize campaigns, analyze customer behavior, and strengthen customer engagement. This finding indicates that marketing transformation represents one of the most visible organizational impacts of AI implementation. The high frequency of the word efficiency reflected participants' strong emphasis on operational improvement and workflow optimization. Many interviewees discussed how AI technologies reduced delays, accelerated reporting systems, improved coordination, and minimized repetitive administrative tasks. The repeated reference to efficiency suggests that organizations primarily viewed AI as a tool for improving productivity and organizational performance. The term customers also appeared prominently in the analysis, indicating the significant role of AI in improving customer service, customer analysis, and customer interaction. Participants repeatedly explained that AI systems enhanced communication speed, personalized marketing activities, and customer satisfaction. This demonstrates that customer-centered strategies became a major organizational priority during AI-driven transformation. The frequent appearance of automation highlighted the growing reliance on AI systems to perform routine and repetitive tasks automatically. Participants emphasized automation as one of the key advantages of AI integration because it reduced manual workload, improved accuracy, and allowed employees to focus on more strategic organizational responsibilities. Automation was strongly connected to operational modernization and administrative re-engineering. The word processes also appeared repeatedly throughout the interviews, indicating that organizational restructuring and process improvement were major topics discussed by participants. AI technologies were consistently associated with redesigning traditional administrative and marketing procedures to create more flexible, responsive, and efficient operational systems. The term employees emerged frequently because many participants discussed employee adaptation, resistance, training needs, and concerns regarding job security during AI implementation. This finding demonstrates that technological transformation not only affects organizational systems but also significantly influences workplace culture and employee experiences. The repeated use of the word data reflected the increasing importance of information management, predictive analytics, and data-driven decision-making within organizations. Participants emphasized that AI technologies enabled companies to collect, organize, and analyze data more effectively, contributing to stronger strategic planning and market analysis. The word communication also appeared frequently in the analysis, highlighting improvements in both internal organizational coordination and external customer interaction. Participants explained that AI-supported systems improved communication speed, responsiveness, and collaboration between departments. Finally, the term technology demonstrated participants' awareness of ongoing digital transformation within the private sector. The repeated discussion of technology reflects the broader organizational shift toward innovation, modernization, and intelligent operational systems.

Table 6. Axial Coding Relationships

Category	**Connected Theme**
Automation	Administrative Efficiency
Predictive Analytics	Decision-Making
Customer Insights	Marketing Transformation
Employee Fear	Organizational Challenges
Data Integration	Operational Improvement

The axial coding analysis was conducted to identify relationships between the initial open codes and the broader organizational themes that emerged during the qualitative analysis. Using NVivo software, the researcher examined how different concepts interacted with one another and contributed to the overall impact of Artificial Intelligence on administrative and marketing process re-engineering within private sector companies in Erbil, Kurdistan Region of Iraq. This stage of analysis helped connect individual experiences and organizational observations into more comprehensive thematic structures. One of the strongest relationships identified during axial coding was between automation and administrative efficiency. Participants repeatedly explained that AI technologies automated repetitive operational tasks such as reporting, scheduling, customer communication, and workflow management. This automation reduced manual workload, minimized delays, and improved coordination between departments. As a result, organizations experienced faster administrative performance and greater operational efficiency. The analysis demonstrated that automation became a central driver of organizational restructuring and process improvement. Another important relationship emerged between predictive analytics and decision-making. Participants emphasized that AI-supported analytical systems allowed managers to access real-time organizational information and market data more effectively. Predictive analytics helped organizations forecast customer behavior, identify market trends, and evaluate business performance with greater accuracy. This strengthened managerial decision-making by enabling organizations to make more strategic, data-driven, and timely decisions. The findings suggest that AI technologies increasingly support organizational planning and strategic responsiveness. The relationship between customer insights and marketing transformation also emerged strongly during the analysis. Participants explained that AI systems improved the organization's ability to collect and analyze customer data, enabling businesses to better understand customer preferences, behaviors, and expectations. These customer insights supported personalized marketing campaigns, targeted advertising, and improved customer engagement strategies. The analysis demonstrated that AI-driven customer analysis significantly transformed traditional marketing approaches and strengthened organizational competitiveness. The axial coding process also identified a connection between employee fear and organizational challenges. Although AI technologies introduced many operational benefits, several participants discussed concerns among employees regarding job security and technological replacement. Some workers initially resisted AI implementation because they feared automation could reduce the need for human labor. This relationship highlights the cultural and psychological challenges associated with technological transformation within organizations. The findings indicate that successful AI implementation requires effective employee communication, organizational support, and continuous training programs to reduce resistance and encourage adaptation. Another important relationship identified during the analysis was between data integration and operational improvement. Participants emphasized that AI-supported systems improved data management, information accessibility, and communication across departments. Better integration of organizational data enabled smoother workflows, faster reporting, and improved coordination between business functions. This contributed to stronger operational performance and organizational flexibility. The analysis suggests that data integration became an essential factor supporting AI-driven organizational modernization.

5. Discussion of Findings

The axial coding analysis represented one of the most important stages of the qualitative data analysis because it allowed the researcher to move beyond isolated codes and identify meaningful relationships between concepts, organizational behaviors, and broader themes. After completing the open coding stage in NVivo, the researcher systematically examined how different categories interacted with one another and how these relationships collectively explained the impact of Artificial Intelligence on administrative and marketing process re-engineering within private sector companies in Erbil, Kurdistan Region of Iraq. Axial coding helped organize fragmented interview data into structured conceptual relationships, allowing the researcher to better understand the organizational transformation created by AI technologies.

Using NVivo software, the researcher linked similar ideas, recurring experiences, and organizational patterns into connected thematic structures. This analytical process enabled the identification of causal relationships, organizational influences, behavioral responses, and operational outcomes associated with AI implementation (Carlizzi, 2025). Rather than viewing codes separately, axial coding explored how one organizational factor influenced another. This stage strengthened the analytical depth of the research by connecting employee experiences, managerial perspectives, technological systems, and operational changes into integrated explanatory categories.

One of the strongest and most consistent relationships identified during the axial coding process was between automation and administrative efficiency. Participants repeatedly described how AI technologies automated repetitive and time-consuming administrative tasks such as reporting, scheduling, internal communication, customer inquiries, document management, and workflow monitoring. Many organizations previously relied heavily on manual administrative systems that consumed significant employee time and slowed organizational processes (Nkurunziza et al., 2023). After implementing AI-supported systems, participants observed that operational activities became faster, more accurate, and more organized. Employees spent less time on routine tasks and were able to focus more on strategic and value-generating responsibilities (AlGumlasi et al., 2023).

The relationship between automation and administrative efficiency also reflected broader organizational restructuring. Participants explained that automation reduced operational delays, minimized human errors, and improved coordination between departments. AI technologies enabled organizations to centralize information, monitor workflow performance in real time, and streamline communication channels. This increased the speed of organizational operations and improved overall business productivity. The analysis demonstrated that automation was not simply a technical improvement, but a major organizational transformation that reshaped administrative structures and operational management practices. Another highly significant relationship identified during axial coding was between predictive analytics and decision-making. Participants consistently emphasized that AI-supported analytical systems improved the quality, speed, and accuracy of managerial decisions (Hasibuan & Larisang, 2024). Organizations increasingly relied on AI technologies to process large amounts of organizational and market data, generate predictive reports, identify customer trends, and evaluate business performance. Managers explained that traditional decision-making processes often depended on delayed information and manual evaluations, whereas AI systems provided real-time analytical insights that supported faster and more strategic responses (Raffak et al., 2024).

Predictive analytics also enhanced organizational adaptability within competitive business environments. Participants noted that AI technologies enabled organizations to forecast market changes, customer demands, operational risks, and business opportunities more effectively. By improving access to accurate and timely information, AI systems strengthened organizational planning and strategic responsiveness. The findings suggest that predictive analytics became an important organizational tool supporting evidence-based management and long-term business sustainability (Wang & Hamid, 2026). The relationship between customer insights and marketing transformation also emerged strongly during the analysis. Participants repeatedly discussed how AI technologies improved the organization's ability to understand customer behavior, preferences, expectations, and purchasing patterns (Li & Nazif, 2022). AI-supported systems collected and analyzed customer data from multiple digital platforms, enabling businesses to generate detailed customer profiles and behavioral predictions. These insights allowed organizations to move away from generalized marketing approaches toward more personalized and targeted marketing strategies (Wong et al., 2024).

Participants explained that AI-driven customer analysis improved advertising effectiveness, customer engagement, social media interaction, and promotional planning. Marketing campaigns became more customized and data-driven, allowing organizations to target specific customer groups more accurately. Personalized recommendations, automated communication systems, and predictive advertising increased customer satisfaction and strengthened organizational competitiveness. The axial coding analysis demonstrated that customer insights played a central role in transforming traditional marketing systems into more intelligent, adaptive, and customer-focused processes (Agarwal et al., 2024). The axial coding process also identified a strong relationship between employee fear and organizational challenges. While most participants acknowledged the operational advantages of AI technologies, several also discussed the psychological and cultural difficulties associated with technological transformation. Many employees initially feared that automation and intelligent systems would replace human labor, reduce job opportunities, or change traditional workplace roles. These concerns created resistance toward organizational change and slowed adaptation processes within some companies (Giakomidou & Kriemadis, 2024).

Participants explained that employee fear was often linked to uncertainty regarding future job security, limited understanding of AI technologies, and insufficient training opportunities. Some workers perceived AI implementation as a threat rather than an opportunity for organizational improvement. This relationship highlighted the importance of human factors within digital transformation processes (Khoshkam et al., 2026). The findings indicate that successful AI integration requires organizations to address employee concerns through effective communication, continuous training programs, organizational support, and participatory change management strategies. Organizations that invested in employee skill development and technological awareness experienced smoother implementation processes and lower resistance levels.

Another important relationship identified during the analysis was between data integration and operational improvement. Participants emphasized that AI-supported systems improved how organizations collected, stored, managed, and shared information across departments. Before implementing AI technologies, many companies experienced fragmented data systems, communication delays, and inefficient information management practices. AI technologies

allowed organizations to integrate multiple operational systems into centralized digital platforms, improving accessibility and organizational coordination (Musonda & Okoro, 2022). Better data integration enabled faster reporting, smoother communication, more accurate performance monitoring, and stronger collaboration between departments. Participants explained that integrated AI systems improved organizational transparency and reduced operational duplication. Managers could monitor organizational performance more effectively and identify operational issues more quickly. This relationship demonstrated that data integration became a fundamental component of AI-driven organizational modernization and operational efficiency.

Furthermore, the axial coding analysis revealed that these organizational relationships were highly interconnected rather than isolated. Automation improved administrative efficiency, which in turn supported better decision-making and operational flexibility. Customer insights strengthened marketing transformation, which contributed to organizational competitiveness and market responsiveness. Data integration supported communication, workflow coordination, and predictive analytics simultaneously. At the same time, employee adaptation challenges influenced the overall success of technological implementation. This interconnected structure demonstrated that AI technologies impact multiple organizational dimensions simultaneously and create both technical and human transformations within private sector organizations. Overall, the axial coding analysis provided a comprehensive understanding of how Artificial Intelligence influences organizational process re-engineering in private sector companies in Erbil, Kurdistan Region of Iraq. The findings revealed that AI technologies contribute significantly to administrative efficiency, strategic decision-making, customer engagement, marketing transformation, operational flexibility, and organizational competitiveness. However, the analysis also demonstrated that successful technological transformation depends heavily on employee adaptation, organizational support, and effective change management practices. These interconnected relationships collectively illustrate the complex and multidimensional nature of AI-driven organizational transformation within modern private sector environments.

6. Conclusion

Artificial Intelligence has become a transformative force influencing administrative and marketing process re-engineering within private sector companies in Erbil, Kurdistan Region of Iraq. The study demonstrated that AI technologies improve operational efficiency, customer engagement, strategic decision-making, and organizational competitiveness. NVivo thematic analysis revealed that organizations implementing AI-driven systems achieved greater flexibility, faster communication, improved customer targeting, and stronger operational coordination. At the same time, organizations continue to face challenges related to employee adaptation, technical expertise, and organizational readiness. The study concludes that successful AI integration requires balanced organizational strategies combining technological innovation with employee development and long-term planning. Private sector companies that effectively integrate AI into their administrative and marketing systems are more likely to sustain competitiveness in rapidly evolving business environments.

7. Recommendations

1. Organizations should invest in employee AI training programs.

2. Companies should gradually implement AI technologies to reduce resistance.
3. Businesses should strengthen digital infrastructure and data management systems.
4. AI implementation strategies should align with organizational objectives.
5. Organizations should establish ethical guidelines regarding AI usage and employee roles.

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