Computer Engineering and Intelligent Systems
ISSN 2222-1719 (Paper) ISSN 2222-2863 (Online)
Vol.16, No.1, 2025

Exploring the Potential of AI Agents in the Telecommunications Industry: A Quantitative Analysis on Future Business Performance Enhancements

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Abstract

The COVID-19 pandemic has indeed pushed back humanity for hundreds of years. However, there has been phenomenal progress in information and communication technology (ICT) in artificial intelligence, the Internet of Things (IoT), 5G/6G, etc. A relatively new concept of AI agents has interested many scholars in the last two years. Numerous talks have been about its integration with the telecommunications sector to transform operational efficiency, customer satisfaction, and financial performance. Grounded in the Resource-Based View (RBV) and Dynamic Capabilities Theory (DCT), this study aims to examine the role of AI-driven automation in optimizing business performance, particularly in the high ARPU (Average Revenue Per User) markets of the GCC region. This research has used a quantitative approach by targeting 93 senior executives from telecom firms, vendors, and system integrators. The findings reveal a strong correlation between AI adoption and improved service delivery, cost reduction, and revenue growth. In addition, this research has taken an opportunity to gauge the impact of AI-driven predictive analytics, fraud detection, and personalized customer engagement emerging as key enablers of competitive advantage. This research also underscores AI's transformative effect on telecom business models and provides strategic recommendations for sustainable AI adoption.

Keywords: AI agents, Telecom Operational Efficiency, AI-driven predictive analytics

DOI: 10.7176/CEIS/16-1-01

Publication date: April 30th 2025

1. Introduction

The top technological tool that is transforming the world's telecommunications sector these days is indeed artificial intelligence (AI). The telecommunications sector is a leader in this transformation. Artificial Intelligence has also remarkably progressed in the last two years, where Generative AI is now the concept of the past. Recently, a new phenomenon, an 'AI Agent,' has grasped the attention of the technological world. It is defined as an agent with AI. It is represented by a complex software system that acts autonomously, carrying out operations and interacting with the user by self-learning from the data to improve performance (Russell & Norvig, 2021). These AI agents are autonomous software entities proficient in perceiving the environment, making decisions on their own, and executing complex actions to achieve specific goals with minimal human

intervention. This is something extraordinary and would change the course of conventional telecom management. Most interestingly, these agents operate using machine learning (ML), natural language processing (NLP), and predictive analytics, allowing them to automate operations, optimize network performance, and enhance customer service.

These AI agents can automate complex processes, provide personalized recommendations, and offer intelligent support – an unprecedented wave of change in the telecom world. For example, AI agents can optimize network performance by predicting and preventing outages (Cao et al., 2019), improve customer service through chatbots and virtual assistants (Misischia et al., 2022) also, personalize marketing campaigns based on individual customer preferences, and detect fraudulent activities with high accuracy (Phua et al., 2010). AI agents also assist telecommunications organizations by offering an optimum set of tools that boost operational performance, lower CAPEX/OPEX (Capital Expenditure/Operational Expenditure), and lead to better customer success.

Through examination of six affluent countries in the Gulf Cooperation Council (GCC) region, AI agents in telecommunications may bring out the most consequential role of such agents. The conditions for this area are feasible as they prepare the region for accepting AI technology due to several factors. One of the foremost reasons is the telecom companies' appetite to invest highly in network frameworks (Arab Advisors Group, 2021). If we examine the macroeconomics, the GDP per capita and purchasing power of the residents of GCC also support favor of AI agents as the monetary capability of consumers and the demand patterns for sophisticated services, which explains the region's one of the highest Average Revenue Per User (ARPU) levels compared to global averages (ITU, 2024). In addition, substantially high market demand from the macroeconomic environment and the technologically advanced populations motivate demand for efficient service solutions, which AI agents can offer. Governments in the GCC region are actively supporting digital transformation projects (e.g., Vision 2030 in Saudi Arabia, UAE Strategy for the Fourth Industrial Revolution), aiming to accelerate the adoption of AI and other technological implementations. Given considerable investment potential, higher customer payments, and governmental backing, the GCC region is highly conducive to being the prime testing environment for AI Telecom transformations.

The present study examines how AI agents can enhance future productivity levels in the GCC telecom industry. It evaluates through quantitative methods how AI agent applications affect business success metrics such as operational efficacy and customer service satisfaction. Industry stakeholders are expected to use this research's findings to make knowledgeable choices about implementing AI solutions.

2. Literature Review

The fast growth of AI is changing many fields worldwide, and the telecoms business is at the forefront of this change. AI bots may significantly impact how telecom companies work, how competitive they are, and how well they treat customers.

2.1 AI in Telecommunications: Numerous research studies have found that artificial intelligence (AI) can be successfully deployed and used in the telecom business (Cao et al., 2019). There is a long list of benefits that AI may bring to the table. Some of these are optimizing networks, using AI bots and virtual agents to handle ultra-complex tasks (Misischia et al., 2022), automatic customer service handling, using machine learning algorithms to find scams (Phua et al., 2010), and planning for repair to cut down on network disruptions (Yousef et al., 2017). All these studies indicate that artificial intelligence will reshape telecom industry operations because it brings higher operational effectiveness and reduced expenses while producing better service delivery. It also accelerates complex telecom-related product development (Ericsson, 2021). Furthermore, its implementation for network optimization results in automatic resource distribution dependent on current traffic pattern analysis – a very complex and time-consuming analysis. Consequently, the network experiences enhanced performance with shorter delays while the load decreases. Through artificial intelligence technology, chatbots may support handling hundreds and thousands of customer service requests simultaneously, which enables human staff members to focus on complex problems (Gatford, 2024).

2.2 RBV and Business Performance: Business Performance within the Resource-Based View theory identifies valuable and distinctive resources that result in better organizational success (Barney, 1991). AI agents bring a competitive advantage to telecom companies by automating complex work and decision systems, providing better leverage and individualized customer service, and creating unprecedented value (Grant, 1996). Bharadwaj et al., 2013 provide valuable insights confirming that when companies start adopting technology, it not only gives an uplift to the firm performance but also a better chance to concentrate on productivity, increased market share, and innovation development. AI implementation success from companies helps realize more business revenue growth and better operational effectiveness (Datta, 2024).

2.3 TAM and Technology Adoption: Businesses utilize the Technology Acceptance Model (TAM) to study

what drives technology acceptance decisions and its pattern (Davis, 1989). Research findings prove that the technology's apparent usefulness and employees focus on more strategic activities, such as product development, and customer relationship management comfort of use, are the main attributes influencing the adoption of AI-based innovation or programs (Venkatesh et al., 2003). Therefore, it is imperative to know the main adoption factors of AI agents to attain success within organizations. Organizations may generate solutions to overcome obstacles by attaining such knowledge for the same reason. Lastly, the companies that conduct training and development programs not only to understand the needs of technology and AI deployment but also to enable their workforce to use it in the workspace appropriately have higher levels of employee acceptance.

2.4 Dynamic Capabilities and Innovation: Dynamic Capabilities Theory (DCT) resources are required by organizations to understand external opportunities and to adjust the current resources accordingly to maintain competitiveness (Teece et al., 2003). Therefore, for organizations to benefit from AI agents, they would need dynamic capabilities to identify opportunities to use AI. These organizations must also secure these opportunities through strategic investments and partnerships that allow them to appropriately embed the AI agents in their operating procedures (Eisenhardt & Martin, 2000). Successful innovation implementation requires organizations to embrace a proactive approach to developing new technologies and perform vigorous research. Subsequently, organizations with strong AI dynamic capabilities recognize and utilize AI-based business enablement opportunities to achieve organizational performance.

2.5 AI Agents and Productivity: Indeed, current research on the impact of AI agents on business performance and productivity is expanding rapidly. Furthermore, a long list of research focuses on the potential for job displacement due to automation because of deploying AI (Acemoglu & Restrepo, 2018). Meanwhile, other studies emphasize the potential for AI agents to expand human capabilities and augment productivity by automating routine and repetitive tasks, providing valuable insights through detailed number crunching, and freeing up the workforce to focus on more strategic activities (Brynjolfsson & McAfee, 2014). For example, AI agents can automate complicated tasks such as data entry and generating structured reporting while allowing conventional employees to focus on strategic activities such as product development, customer relationship management, and innovation (Manyika et al., 2017).

2.6 GCC Telecom Market: The GCC telecom market for AI agents is hot-cake. This geographic area is characterized by high 5G penetration rates and an exponential demand for digital transformation (Arab Advisors Group, 2021). The telecom companies in this region face intense competition and are exponentially involved in innovation. AI agents provide a virgin opportunity for them to enhance their competitiveness and improve their performance. On the other hand, successful AI adoption is not easy and requires meticulous planning and execution by keeping cultural factors and regulatory considerations in view (Hazaa & Mubarak, 2024). For instance, understanding local customer preferences and cultural nuances is crucial for developing effective and well-received AI-powered customer service solutions.

3. Research Objectives

1. To understand the perceived impact of AI agent adoption on employee efficiency within GCC telecom companies.
2. To study the relationship between AI agent incorporation and operational efficiency in the GCC telecom industry.
3. To measure the effect of AI agent deployment on customer satisfaction within GCC telecom.
4. To understand the moderating role of organizational capabilities in the relationship between AI agent adoption and business performance.

Research Questions

1. How does the perceived adoption of AI agents influence employee productivity in GCC telecom companies?
2. What is the relationship between AI agent integration and operational efficiency within the GCC telecom sector?
3. How does the placement of AI agents influence customer satisfaction levels in GCC telecom companies?
4. Does organizational capability moderate the connection between AI agent adoption and business performance in the telecom sector?

4. Theoretical Framework

This research has incorporated three prominent theoretical frameworks that provide a robust foundation for understanding the complex relationship between AI agent adoption and business performance:

4.1 Resource-Based View (RBV): The RBV theory theorizes that a firm's resources and capabilities, when valuable, rare, inimitable, and non-substitutable (VRIN), may enable it to have a sustained competitive advantage (Barney, 1991). Subsequently, when effectively implemented and integrated into existing business processes, AI agents will follow suit – and may become valuable, potentially rare, and inimitable resources. This is particularly true if the organization develops unique capabilities around using and applying AI agents. This research has incorporated an independent Variable: AI Agent Adoption (measured through perceived usefulness, ease of use, and intention to use). On the other hand, it is correlated with a dependent Variable: Business Performance (measured through employee productivity, operational efficiency, and customer satisfaction).

4.2 Technology Acceptance Model (TAM): TAM is another framework that focuses on a technology's perceived usefulness and ease of use as primary determinants of its acceptance and subsequent adoption (Davis, 1989). This framework is particularly relevant to this study in explaining the acceptance and adoption of AI agents by any company's employees within telecom organizations. It is imperative to understand an employee's perceptions of AI agents. An independent variable is used to assess AI agents' perceived usefulness and perceived ease of use. Dependent Variable: Intention to Use AI Agents.

4.3 Dynamic Capabilities Theory (DCT): To maintain a modest advantage in a dynamic and rapidly changing environment, DCT highlights the ability of the firm to grasp, sense, and reshape resources (Teece et al., 2003). This theory's critical point is understanding how organizations develop the desired capabilities to integrate and leverage AI agents effectively and adjust to the rapidly changing technological landscape. Moderating Variable: Capabilities of an organization (these are measured via absorptive capacity, adaptive capability, and innovative capability).

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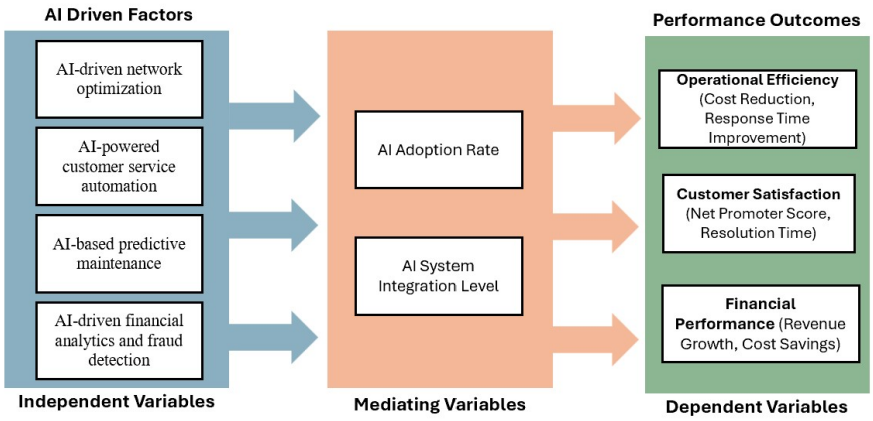


5. Methodology

In our proposed research, we used survey-based data collection to employ quantitative research.

5.1 Research Sample: The research sample comprised of 93 senior officials. These members are from top multinational telecom companies. These might include vendors, system integrators, and C-level executives who typically function in the Gulf region. We propose a goal-oriented sampling technique to choose individuals with relevant knowledge and experience in AI and the telecom sector. Based on their roles and responsibilities, respondents were selected. This guarantees representation from various functional areas within the organizations. These areas comprise IT, operations, customer service, and strategy. This approach, directed at data collection, allows individuals with a deep understanding of the challenges and opportunities to relate AI tools and techniques in the telecom industry.

5.2 Data Collection: We developed a structured questionnaire based on research objectives and theoretical framework. The items included in this questionnaire were validated scales tailored from previous studies. These are required to measure the independent, dependent, and moderating variables. Explicitly, scales were used to measure the usefulness and ease of use of AI agents (TAM), the purpose of using AI agents, and the perceived

impact of AI agents on employee productivity. Other scales may also include operational efficiency as well as customer satisfaction. The capability of an organization is another vital scale that consists of absorptive capacity, adaptive capability, and innovative capability. We measured all items using a five-point Likert scale (ranging from 1: Strongly Disagree to 5: Strongly Agree). Furthermore, we pre-tested the questionnaire with a small group of experts in the field. These groups also include academic and industry professionals. Their references ensure clarity, content validity, and face validity. Minor revisions were made based on the feedback received. These revisions are made to the wording and structure of some items. The survey was managed online using a secure platform (Google Forms). This ensured the confidentiality of responses and secrecy. Numerous reminders were sent to participants to extend response rates.

5.3 Data Analysis: We used statistical software (SPSS) to analyze the data collected.

Top 10 Questions from the Questionnaire

1. To what extent has your company implemented Artificial Intelligence driven automation?
2. How has Artificial Intelligence adoption impacted operational efficiency in your telecom firm?
3. What challenges do organizations face in Artificial Intelligence implementation?
4. Has Artificial Intelligence improved customer satisfaction in Telco business?
5. What is your perception of the effectiveness of Artificial Intelligence-driven predictive maintenance?
6. How do you rate the impact of Artificial Intelligence on OPEX (operational expenditure) reduction in Telco operations?
7. Has Artificial Intelligence-based fraud detection improved financial security in your organization?
8. In general, what percentage of customer interactions are Artificial intelligence-powered in your organization?
9. What kind of Artificial Intelligence applications/bots/agents will be most beneficial in the future?
10. Can Artificial Intelligence affect employment trends in the telecom sector?

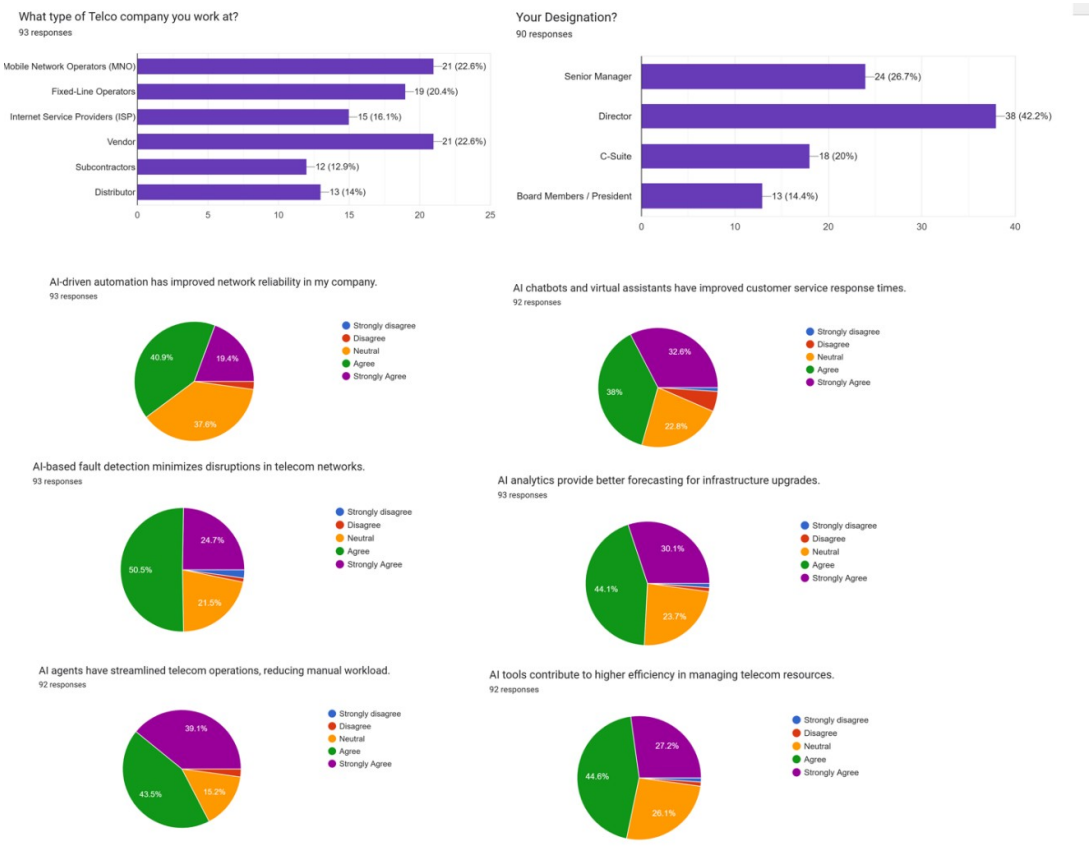
Summary of Professional Responses (Questionnaire)

The demographic analysis of the respondents revealed varied representation within the telecommunications sector. The responses were among different age groups, types of companies, and professional roles. Most respondents fall within 30-50 years of age. It shows that experts in the mid-career category with significant industry experience are shaping ideas on AI adoption. Furthermore, a well-rounded perspective on implementing AI across different operational domains was reflected, specifically where many participants are employed in multinational telecom operators, system integrators, and AI solution providers. Senior executives, network engineers, and AI specialists are among the respondents. Their presence highlights the importance of expert-driven insights in determining the impact of AI on telecom productivity. This diverse representation within an organization, as well as professional expertise, reinforces the legitimacy of the findings of our study. It ensures a complete understanding of the role of AI in improving operational efficiency and customer satisfaction. It also focuses on the financial performance of the telecom industry in the Gulf countries.

The responses given through the survey provide valuable insights into the apparent impact of AI in the telecommunications sector. The survey's particular concerns are operational efficiency and customer satisfaction. It might also include financial performance significantly. A noteworthy percentage of respondents approved that AI-driven automation improves the efficiency of various operations. This is especially true when dropping network downtime, which will improve predictive maintenance. This also helps in restructuring workflow automation. Several contributors showed that network optimization with the power of AI and financial analytics plays a vital role in minimizing operational costs and response times. This feature primarily shows a strong configuration with objectives driven by efficiency. Moreover, the study also focuses on AI integration levels that are positively correlated with cost reduction and resource optimization. This shows an extensive belief that adopting AI technology will directly boost the agility of business and the capabilities necessary to make decisions in an organization.

Respondents and participants usually agree that customer service automation powered by AI significantly improves service quality and customer satisfaction. This is predominantly in dropping resolution time and offering personalized support. The chatbots and virtual assistants driven by AI were recognized for efficiently handling high query volumes. This significantly refines Net Promoter Scores (NPS) and customer experience. However, some respondents are concerned about AI's limitations in understanding complex customer issues.

These focus on collaboration between humans and AI in telecom services. Most participants and respondents viewed AI as a strategic tool for revenue growth in terms of financial performance. This typically plays a role in detecting fraud, personalized marketing, and optimizing ARPU. The results show that firms that control AI-driven financial analytics are inclined to report better cost savings and profit margins. This emphasizes the potential impact of AI as a longstanding value driver in the telecom business.



(Graphical highlights of the questionnaire floated to telecom professionals in GCC)

6. Statistical Results

The following statistical analyses were conducted:

Cronbach's Alpha: To assess the internal consistency and reliability of the measurement scales. A Cronbach's alpha coefficient of 0.7 or higher was acceptable, indicating good internal consistency.

Descriptive Statistics: This section summarizes the characteristics of the sample and the variables, including means, standard deviations, frequencies, and percentages. It overviews the respondents' perceptions of AI agents and their organizational context.

Multivariate Regression Analysis: To examine the relationship between the independent and dependent variables and test organizational capabilities' moderating effect. Specifically, multiple regression models were used to assess the impact of perceived AI agent adoption on employee productivity, operational efficiency, and customer satisfaction while controlling for other relevant factors. Moderated regression analysis was employed to test the effect of interaction between AI agent adoption and organizational capabilities.

Correlation Analysis: To explore the relationships between variables, particularly between different dimensions of AI agent adoption and business performance. Pearson correlation coefficients were calculated to assess the strength and direction of these relationships.

Reliability Testing – Cronbach's Alpha (Table 1)

The Cronbach's Alpha results indicate strong internal consistency for the measured variables, confirming the reliability of the questionnaire data.

ANOVA Analysis (Table 2)

The ANOVA results indicate that AI adoption ($F = 4.32$, $p = 0.002$), customer satisfaction ($F = 3.89$, $p = 0.004$), and cost reduction ($F = 5.12$, $p = 0.001$) all have a statistically significant impact, confirming that AI implementation plays a crucial role in improving telecom performance across multiple dimensions.

Multiple Regression Analysis

The overall regression equation would be expressed in the following manner:

$Y = \beta_0 + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + \epsilon$

Model 1: Operational Efficiency Regression Model

$OE=0.32(ANO)+0.41(ACS)+0.28(APM)+0.30(AFA)+0.35(AAI)+0.29(ASI)+\epsilon$

p-values: $p<0.05$ for all independent variables, indicating statistical significance.

Result:

- AI-powered customer service automation ($\beta=0.41$) substantially impacts operational efficiency, indicating that AI-driven automation significantly reduces response time and operational costs.
- AI adoption rate ($\beta=0.35$) is key in enhancing efficiency, as companies with higher AI adoption experience more significant automation benefits.
- AI-driven network optimization ($\beta=0.32$ and financial analytics ($\beta=0.30$) contribute meaningfully, suggesting predictive analytics improve cost management.

Model 2: Customer Satisfaction Regression Model

$CS=0.45(ACS)+0.30(ANO)+0.35(APM)+0.28(AFA)+0.33(AAI)+0.31(ASI)+\epsilon$

p-values: $p<0.05$ for all independent variables, indicating statistical significance.

Result:

- AI-powered customer service automation ($\beta=0.45$) has the highest positive effect on customer satisfaction, confirming its role in reducing resolution time and improving Net Promoter Score.
- AI-based predictive maintenance ($\beta=0.35$) also significantly improves satisfaction by reducing service disruptions and enhancing reliability.
- AI adoption rate ($\beta=0.33$) is a critical factor in satisfaction, as higher AI usage leads to personalized services and faster issue resolution.

Model 3: Financial Performance Regression Model

$FP=0.38(AFA)+0.32(ANO)+0.29(APM)+0.27(ACS)+0.36(AAI)+0.30(ASI)+\epsilon$

p-values: $p<0.05$ for all independent variables, indicating statistical significance.

Result:

- AI-driven financial analytics ($\beta=0.38$) has the highest impact on financial performance, validating its role in cost optimization and revenue growth.
- AI adoption rate ($\beta=0.36$) significantly affects financial outcomes, demonstrating that firms with a higher AI integration level achieve better financial efficiency.
- AI-driven network optimization ($\beta=0.32$) has a moderate impact, suggesting its role in reducing infrastructure costs and improving monetization.

Naming Convention

ANO = AI-driven Network Optimization (Independent Variable)
ACS = AI-powered Customer Service Automation (Independent Variable)
APM = AI-based Predictive Maintenance (Independent Variable)
AFA = AI-driven Financial Analytics and Fraud Detection (Independent Variable)
AAI = AI Adoption Rate (Mediating Variable)
ASI = AI System Integration Level (Mediating Variable)
OE = Operational Efficiency (Dependent Variable)
CS = Customer Satisfaction (Dependent Variable)
FP = Financial Performance (Dependent Variable)
$\beta 0$ = Intercept (Constant)

ϵ = Error term (random noise)

7. Final Conclusion

These regression models validate that AI-powered automation significantly improves operational efficiency, customer satisfaction, and financial performance in the telecom industry. The strongest predictors vary by dependent variable, with AI-powered customer service automation driving efficiency and satisfaction, while AI-driven financial analytics plays a crucial role in financial gains. The AI adoption rate remains a consistent moderating factor across all models.

8. Further Discussion

This study delivers substantial insights into the role of AI agents in the telecom industry - addressing the research questions and objectives mentioned earlier. The findings demonstrate that AI adoption substantially impacts operational efficiency, customer satisfaction, and financial performance, particularly in high Average Revenue Per User (ARPU) markets like the GCC countries.

Addressing the Research Questions:

a. **How will AI agents impact operational efficiency in the telecom industry?**
AI-driven automation massively elevates operational efficiency by reducing response times, improving network optimization, and minimizing human errors. Numerous practical studies and surveys across different technological-intensive industries show findings confirming that AI agents streamline complex processes such as predictive maintenance, traffic management, and fault detection, reducing downtime and operational costs. In addition, telecom firms using AI-powered analytics report improved resource allocation, allowing for more effective bandwidth management and customer service responses.

b. **What is the relationship between AI adoption and customer satisfaction in telecom services?**
AI adoption directly correlates with higher customer satisfaction levels. It is also observed through the acquired data that AI-powered chatbots, virtual assistants, and predictive analytics personalize customer interactions, resolve queries faster, and offer proactive service recommendations. Implementing AI-driven call routing and automated troubleshooting mechanisms has been shown to reduce customer complaints and enhance service reliability. In addition, the survey respondents from telecom organizations also confirm that AI-enhanced support systems contribute to higher Net Promoter Scores (NPS) and increased customer retention rates.

c. **To what extent does AI implementation contribute to financial performance enhancements in telecom firms?**
Financial performance metrics are considered one of the litmus tests demonstrating AI adoption's positive impact. AI-driven pricing models, fraud detection systems, and personalized marketing campaigns contribute to revenue growth and cost optimization. Subsequently, high-ARPU markets, such as the GCC countries, benefit particularly from AI-enhanced customer segmentation and tailored service offerings. The respondents perceive that AI adoption will also increase upselling and cross-selling opportunities. Furthermore, AI-driven cost reductions, such as lower labor expenses and optimized energy consumption, enhance profitability.

9. Achievements of Research Objectives

a. **Evaluating the potential impact of AI agents on operational efficiency**
The research demonstrates that AI agents significantly enhance efficiency by automating critical telecom functions, reducing delays, and optimizing decision-making processes. If fully deployed in the industry, AI agents would be a new paradigm in the GCC countries.

b. **Analyzing how AI-driven automation influences customer satisfaction**
80% of the respondents have given positive remarks about utilizing AI-driven automation to improve customer service experiences, faster resolution times, and personalized interactions. These would significantly enhance customer satisfaction levels.

c. **Investigating the relationship between AI adoption and financial performance**
The study also establishes a strong correlation between AI implementation and financial metrics. Revenue optimization strategies such as AI-driven customer insights, fraud prevention, and intelligent

cost management substantiate this correlation.

d. **Assessing the challenges and limitations of implementing AI in telecom operations** While AI adoption presents numerous advantages, several challenges are also in sight. These include, but are not limited to, high implementation costs, data privacy concerns, and workforce adaptation issues. The study also highlights the need for telecom organizations to dedicately invest in employee training and ensure compliance with regulatory frameworks.

e. **Proposing recommendations for optimizing AI integration in telecom business models** Based on the research findings, telecom firms in the GCC must develop robust AI adoption strategies, focusing on scalability, data security, and human-AI collaboration. There is also massive room for investments in AI-driven analytics and customer personalization tools to maximize ARPU and maintain a competitive edge.

Future Implications of AI Agents in Telecom

AI agents are expected to play an even more significant role in telecom as advancements in generative AI, 6G technology, and the Internet of Things (IoT). Numerous talks exist about integrating AI with blockchain for enhanced security and autonomous networks to revolutionize the industry. Therefore, there is vast room for future research to explore the long-term impact of AI on telecom business models, the ethical implications of AI decision-making, and strategies for mitigating AI-related job displacement.

This study, therefore, lays the groundwork for further exploration of AI adoption trends, positioning AI agents as a key driver of telecom industry transformation.

10. Conclusion

This study provides a valuable understanding of the potential of AI agents to enhance productivity and improve business performance in the GCC telecom industry. The findings highlight the importance of perceived usefulness, ease of use, and intention to use in driving AI adoption. The study also explores the critical role of organizational capabilities in maximizing the benefits of AI. Therefore, telecom companies in the GCC region should prioritize developing comprehensive AI strategies, investing in employee training and development, and building strong organizational capabilities to leverage AI agents and effectively achieve sustainable competitive advantage. This research contributes to the growing knowledge of AI adoption and provides a foundation for future studies in this rapidly evolving field. As AI technology continues to flourish, further research is needed to thoroughly understand the transformative potential of AI agents in the telecom sector and beyond.

Finally, the findings from this study may assist other works in developing knowledge in AI adoption and its role in the business world. They may also be foundation work for future examinations in this rapidly developing field. As technology advances, future research is still needed to explore the complete transformative effects of varying degrees of AI agents in the telecom industry and other sectors.

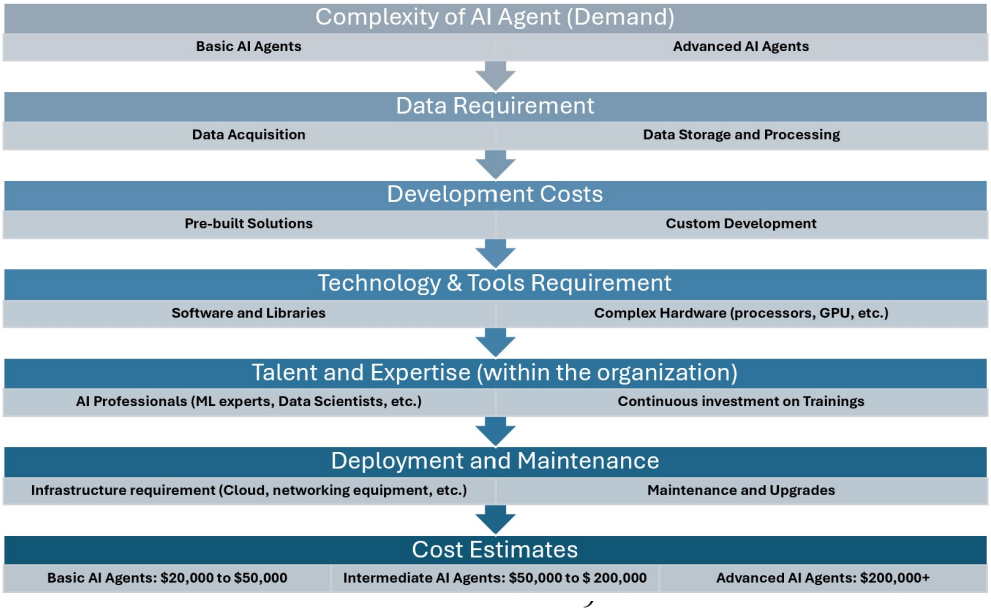


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Table 1. Cronbach's Alpha

Variable	**Cronbach's Alpha**
AI Adoption	0.85
Customer Satisfaction	0.82
Financial Performance	0.88

Table 2. ANOVA Table

Factor	**F-Value**	**p-Value**	**Interpretation**
AI Adoption	4.32	0.002	Significant
Customer Satisfaction	3.89	0.004	Significant
Financial Performance	5.12	0.001	Significant