

Midocean University

Faculty of Management

Department/ Specialization



The role of using information technology in improving the quality of services

Introduction to Saudi Telecom Companies

Student name

Amir Ayub

Final Project - 2

Faculty of Management - Midocean University

Supervisor

Dr. Mona Moustafa Elashry

Faculty member- Faculty of management- Midocean University

Date of submission – number of Semester

Acknowledgment

I am deeply grateful to many people who supported and guided me throughout the course of this research project. First and foremost, I would like to express my sincere gratitude to my supervisor, Dr. Mona Moustafa Elashry, for her expertise and commitment have greatly contributed to the success of this study.

I would also like to extend my heartfelt thanks to the faculty members of the Faculty of Management at Midocean University for their assistance and encouragement. Their dedication to fostering an enriching academic environment has been instrumental in shaping my research.

I am also grateful to my friends and colleagues for their support and motivation throughout this journey. Their encouragement has been a source of strength and inspiration.

Lastly, I owe a profound debt of gratitude to my family for their unwavering support, understanding, and patience. Their belief in me has been a constant source of motivation and has enabled me to overcome the challenges encountered during this research.

Thank you all for your support and contributions, without which this research would not have been possible.

Amir Ayub

Dedication

This research is dedicated to my family, whose unwavering support, encouragement, and love have been my constant source of strength. To my parents, who instilled in me the values of hard work and perseverance, whose patience and understanding have been invaluable throughout this journey.

I also dedicate this work to my mentor, Dr. Mona Moustafa Elashry, whose guidance and wisdom have been instrumental in shaping my academic path. Your dedication to my growth and success has been deeply appreciated.

Finally, to all those who have contributed to my personal and professional development, this research is a testament to your belief in me. Thank you for your unwavering support and encouragement.

Abstract

This study aimed to study the relationship between the use of information technology and improving quality Services provided by telecommunications companies, as an attempt to reach a set of results and recommendations During the field study carried out by the researcher on the telecommunications company under study in order to investigate Optimal use of information technology in order to improve the quality of services provided in company Communications.

Keywords:

Information Technology (IT) , Service Quality , Telecommunications Industry , Saudi Arabia , Customer Satisfaction , Customer Relationship Management (CRM) , Network Management , Data Analytics

Table of Contents

Acknowledgment	1
Dedication	2
Abstract	3
Chapter 1: Introduction	8
1.1. Research Background	9
1.2. Research Problem	12
1.2.1. Theoretical Gaps	12
1.2.2. Practical Gaps	12
1.3. Research Significance	13
1.3.1. At the theoretical level	13
1.3.2. At the practical level	13
1.4. Research Questions	14
1.5. Research Objectives	14
1.6. Research Hypotheses	15
1.7. Research Model	16
1.8. Scope of The Study	17
1.9. The Project Structure	17
2. Chapter 2: Literature Review	19
2.1. Introduction	20
2.2. The independent variable	20
2.3. The dependent variables	20
2.4. The relationship between the independent and the	21
dependent variables	21
2.5 Conclusion	23
3. Chapter 3: Research Methodology	24
3.1. Introduction	25
3.2. Operational definitions for research variables	25
3.3. Research design (research onion)	25
3.4. Research population & Sampling methods and technique	26
3.5. Data collection method	26

3.6.	Types of data	27
3.7.	Statistical analysis procedures.....	27
3.8.	Conclusion	27
Chapter 4: Statistical Analysis & Findings discussion		29
4.1	Introduction	30
4.2	Sample profile (descriptive statistics for research sample)	30
4.3	Validity & reliability tests for the questionnaires.....	31
4.4.	Descriptive statistics for research variables (answer research questions).....	33
4.5	Testing Hypotheses & Findings Discussion	38
4.6	Conclusion	48
Chapter five: Research limitations, Recommendations & Conclusion.....		49
5.1	Research Results	50
5.2	Research Limitations & Future Research	51
5.3	Research Recommendations.....	51
References.....		55
Appendix.....		57

List of Figures

Figure 1 1research variables . researcher	16
Figure 2 research structure . researcher	17
Figure 3 project design : researcher	26

List of Tables

Table 1 Results of descriptive statistics for the questions of the independent variable (X) use of information technology)	30
Table 2 test according to Cronbach's alpha	32
Table 3 Results of descriptive statistics for the dependent variable questions (1Y Tangibility)	33
Table 4 Results of descriptive statistics for the dependent variable questions (Y2 Reliability)	34
Table 5 Results of descriptive statistics for the dependent variable questions (Y3 Response)	35
Table 6 Results of descriptive statistics for the dependent variable questions (Y4 Security)	36
Table 7 Results of descriptive statistics for the dependent variable questions (Y5 Empathy)	37
Table 8 Model Summary.....	39
Table 9 ANOVAa (a. Dependent Variable: Improving the quality of service, b. Predictors: (Constant) , technology use)	39
Table 10 Coefficientsa (a. Dependent Variable: y1).....	39
Table 11 Model Summary.....	40
Table 12 ANOVAa (a. Dependent Variable: Improving the quality of service, b. Predictors: (Constant) , technology use)	41
Table 13 Coefficientsa (a. Dependent Variable: y2).....	41
Table 14 Model Summary.....	42
Table 15 ANOVAa (a. Dependent Variable: Improving the quality of service, b. Predictors: (Constant) , technology use)	42
Table 16 Coefficientsa (a. Dependent Variable: y3).....	43
Table 17 Model Summary.....	44
Table 18 ANOVAa (a. Dependent Variable: Improving the quality of service, b. Predictors: (Constant) , technology use)	44
Table 19 Coefficientsa (a. Dependent Variable: y4).....	44
Table 20 Model Summary.....	45
Table 21 ANOVAa (a. Dependent Variable: Improving the quality of service, b. Predictors: (Constant) , technology use)	45
Table 22 Coefficientsa (a. Dependent Variable: y5).....	46
Table 23 Model Summary.....	47
Table 24 ANOVAa (a. Dependent Variable: Improving the quality of service, b. Predictors: (Constant) , technology use)	47
Table 25 Coefficientsa (a. Dependent Variable: Improving the quality of service)	47

Chapter 1: Introduction

1.1. Research Background

The telecommunications sector in Saudi Arabia has experienced rapid growth and transformation over the past two decades. This change has been largely driven by advancements in information technology (IT), which have played a critical role in enhancing service quality, operational efficiency, and customer satisfaction. Leading telecom companies in Saudi Arabia, such as Saudi Telecom Company (STC), Mobily, and Zain KSA, have increasingly integrated IT solutions into their operations to stay competitive and meet the evolving demands of their customers.

The evolution of IT in the Saudi telecommunications sector began in earnest in the early 2000s, spurred by the liberalization of the telecom market and substantial investments in IT infrastructure. This period marked a significant shift from traditional telephony services to more advanced, IT-driven service models. According to Al-Debei, Al-Lozi, and Papazafeiropoulou (2013), the early adoption of IT was instrumental in setting the stage for further technological advancements and improvements in service delivery (Al-Debei, A. I., Al-Lozi, E., & Papazafeiropoulou, A. (2013).

During this period, the focus was primarily on modernizing the network infrastructure to support higher bandwidth and faster data transmission. The implementation of digital switching systems and the introduction of mobile telecommunications were key milestones. These advancements were essential in enabling telecom companies to offer a wider range of services, including internet connectivity and mobile communications, thereby laying the groundwork for the future integration of more sophisticated IT solutions.

One of the most significant ways IT has enhanced service quality in the Saudi telecom sector is through the implementation of advanced network management systems. These systems improve the reliability and efficiency of telecom networks by minimizing downtime and enhancing overall performance. Al-Mudimigh and Ullah (2011) emphasize that the use of IT in network management has significantly reduced operational costs while improving service

quality, leading to higher levels of customer satisfaction (Al-Mudimigh, A. S., & Ullah, Z. (2011)

In addition to network management, IT has enabled the deployment of sophisticated billing systems that ensure accuracy and transparency in billing processes, thereby enhancing customer trust and satisfaction. These systems have minimized billing errors and streamlined the payment process, making it more convenient for customers and reducing the incidence of billing disputes.

Customer Relationship Management (CRM) systems have become a cornerstone of the telecom industry in Saudi Arabia, leveraging IT to manage customer interactions and data effectively. CRM systems enable telecom companies to provide personalized services and support by offering deep insights into customer preferences and behaviors. Alshawhi, Missi, and Irani (2011) note that CRM systems have significantly improved customer service by allowing telecom companies to tailor their services to meet individual customer needs (Alshawhi, S., Missi, F., & Irani, Z. (2011).

Moreover, CRM systems facilitate more effective communication with customers, enabling telecom companies to address issues promptly and improve overall customer satisfaction. The ability to track and analyze customer interactions helps companies anticipate customer needs and deliver proactive service improvements.

The adoption of data analytics and business intelligence (BI) tools has revolutionized the telecom sector in Saudi Arabia. These technologies enable companies to analyze vast amounts of data to gain valuable insights into customer behavior, market trends, and operational performance. According to a report by Ernst & Young (2014), the integration of BI tools has allowed Saudi telecom companies to make more informed decisions that enhance service quality and competitiveness (Ernst & Young. (2014).

By leveraging data analytics, telecom companies can optimize their marketing strategies, improve customer targeting, and enhance service offerings. This data-driven approach has led to more efficient operations and better customer experiences, positioning Saudi telecom companies to respond more effectively to market demands and customer expectations.

With the increasing reliance on IT, robust cybersecurity measures have become essential to protect sensitive customer data and ensure the integrity of telecom networks. Saudi telecom companies have made significant investments in cybersecurity technologies to safeguard their systems against potential threats. Alotaibi (2014) underscores the importance of cybersecurity in maintaining customer trust and preventing service disruptions, which are crucial for sustaining high service quality (Alotaibi, S. (2014).

Effective cybersecurity measures are critical for protecting customer information and ensuring the continuity of services. The implementation of advanced security protocols and regular security assessments helps prevent data breaches and cyber-attacks, thereby maintaining the integrity and reliability of telecom services.

The digital transformation of the Saudi telecom industry is being accelerated by the Vision 2030 initiative, which aims to diversify the economy and enhance quality of life through technological innovation. Emerging technologies such as 5G, the Internet of Things (IoT), and artificial intelligence (AI) are expected to further improve service quality and drive growth in the telecom sector. Al-Turki, Al-Homaidhi, and Al-Dossari (2020) discuss how these technologies are being integrated into the operations of Saudi telecom companies, highlighting their potential to revolutionize service delivery and customer experience (Al-Turki, U., Al-Homaidhi, S., & Al-Dossari, H. (2020)

The adoption of 5G technology, in particular, is set to transform the telecom landscape by providing faster, more reliable connectivity. This will enable new applications and services, such as smart cities and autonomous vehicles, further enhancing the quality of services provided by telecom companies.

The integration of information technology has played a crucial role in improving the quality of services offered by telecom companies in Saudi Arabia. From enhancing network performance and customer service to leveraging data analytics and ensuring cybersecurity, IT has become an indispensable component of the telecom industry. As Saudi Arabia continues to pursue its Vision 2030 goals, the role of IT in the telecom sector is expected to grow even further, driving innovation and ensuring that Saudi telecom companies remain competitive on the global stage.

1.2. Research Problem

Through the exploratory study conducted by the researcher on the telecommunications companies under study Damascus Governorate noted the use of some information technology methods in some practices Activities in the telecommunications companies under study in Damascus Governorate, but they were not reflected in an optimal manner To improve performance, improve the quality of services provided to customers, and achieve effectiveness and corporate goals Communications appropriately.

1.2.1. Theoretical Gaps

Despite significant advancements in the integration of information technology (IT) within the telecommunications sector, existing literature often falls short in comprehensively exploring the specific mechanisms through which IT enhances service quality in telecom companies, particularly in the context of Saudi Arabia. Many studies tend to focus broadly on technological adoption and its general impacts on operational efficiency and customer satisfaction without delving into the nuanced interactions between various IT components (e.g., CRM systems, data analytics, and cybersecurity) and service quality metrics. Furthermore, there is a lack of a unified theoretical framework that systematically connects IT implementation with service quality improvements, customer experience, and competitive advantage in the Saudi telecom industry. This gap highlights the need for more granular, context-specific research that can provide deeper insights into how different IT applications specifically contribute to service quality enhancements.

1.2.2. Practical Gaps

In practical terms, while Saudi telecom companies have made substantial investments in IT infrastructure, there remain significant challenges in effectively leveraging these technologies to their full potential. One major practical gap is the inconsistent implementation of advanced IT solutions across different companies, leading to disparities in service quality and customer satisfaction. Additionally, there is often a disconnect between the deployment of IT systems and the training of staff to use these systems effectively, which can result in suboptimal utilization and reduced benefits. Moreover, issues related to cybersecurity and data privacy continue to pose significant risks, as telecom companies must constantly evolve their security measures to protect sensitive

customer data. Addressing these practical gaps requires not only technological investments but also strategic planning, continuous staff training, and robust cybersecurity practices to ensure that IT investments translate into tangible improvements in service quality.

Based on above , the main research question is " **Is there a relationship between the use of information technology and improving the quality of services provided by telecommunications companies?** "

1.3. Research Significance

In the realm of telecommunications, the importance of studying the impact of information technology cannot be overstated. At the theoretical level, telecommunications companies under study hold significant economic and social roles in Saudi society. These companies not only employ a large number of workers, contributing to economic stability, but also provide essential services to the vast majority of the population. By applying this study to telecommunications companies, it is possible to offer well-founded proposals aimed at enhancing their performance. The successful and efficient implementation of such proposals across various business fields may lead to improved overall performance and elevate the quality of services offered to customers.

1.3.1. At the theoretical level

It represents the importance of the telecommunications companies under study, and their important economic and social role in Society, by employing a large number of workers and providing services to most members of saudi society, and to Applying the study to these companies will also contribute to providing proposals to improve their performance to customer Through successful application and efficiency in its various business fields, which may be reflected on Improving its performance and improving the quality of services provided to its customers.

1.3.2. At the practical level

The scientific importance of the research lies in the use of information technology to improve the quality of companies' services

Communications and obtaining the necessary information to improve performance and enhance cognitive and scientific awareness

in information technology, also The research also represents a new scientific study by presenting a scientific study on the study of the relationship between...

Using information technology and improving the quality of telecommunications companies' services through a study New variables and indicators.

1.4. Research Questions

- Is there a relationship between the use of information technology and a number of aspects Tangible materiality as one of the dimensions of the quality of services provided in telecommunications companies?
- Is there a relationship between the use of information technology and the level of reliability credibility as one of the dimensions of the quality of services provided by telecommunications companies?
- Is there a relationship between the use of information technology and speed Responsiveness and customer assistance as one of the dimensions of the quality of services provided in telecommunications companies?
- Is there a relationship between the use of information technology and the level of trust and security (Guarantee) as one of the dimensions of the quality of services provided in telecommunications companies?
- Is there a relationship between the use of information technology and the level of empathy With the customer as one of the dimensions of the quality of services provided in telecommunications companies?

1.5. Research Objectives

The research aims to achieve the following objectives:

First main goal:

Studying the relationship between the use of information technology and improving the quality of services provided in companies Communications.

The following sub-objectives branch out from the first main goal :

- studying the relationship between the use of information technology and counting the aspects between Tangible materiality as one of the dimensions of the quality of services provided in telecommunications companies.
- Study the relationship between the use of information technology and counting between Reliability or credibility as one of the dimensions of the quality of services provided by telecommunications companies.
- Study the relationship between the use of information technology and speed Responsiveness and customer assistance as one of the dimensions of the quality of services provided in telecommunications companies.
- study the relationship between the use of information technology and the level of trust And security (guarantee) as one of the dimensions of the quality of services provided in telecommunications companies.
- Study the relationship between the use of information technology and counting Empathy with the customer as one of the dimensions of the quality of services provided in telecommunications companies.

The second main goal:

Trying to reach a set of results and recommendations through the field study that he will conduct The researcher looked at the telecommunications companies under study in order to achieve the optimal use of information technology In order to improve the quality of services provided by telecommunications companies.

1.6. Research Hypotheses

- There is a significant relationship between the use of information technology and tangible materiality as one of the dimensions of the quality of services provided in telecommunications companies.
- There is a significant relationship between the use of information technology and the level of reliability or credibility as one of the dimensions of the quality of services provided by telecommunications companies.

- There is a significant relationship between the use of information technology and the speed of responsiveness and customer assistance as one of the dimensions of the quality of services provided in telecommunications companies.
- There is a significant relationship between the use of information technology and the level of trust and security (guarantee) as one of the dimensions of the quality of services provided in telecommunications companies.
- There is a significant relationship between the use of information technology and the level of empathy with the customer as one of the dimensions of the quality of services provided in telecommunications companies.

1.7. Research Model

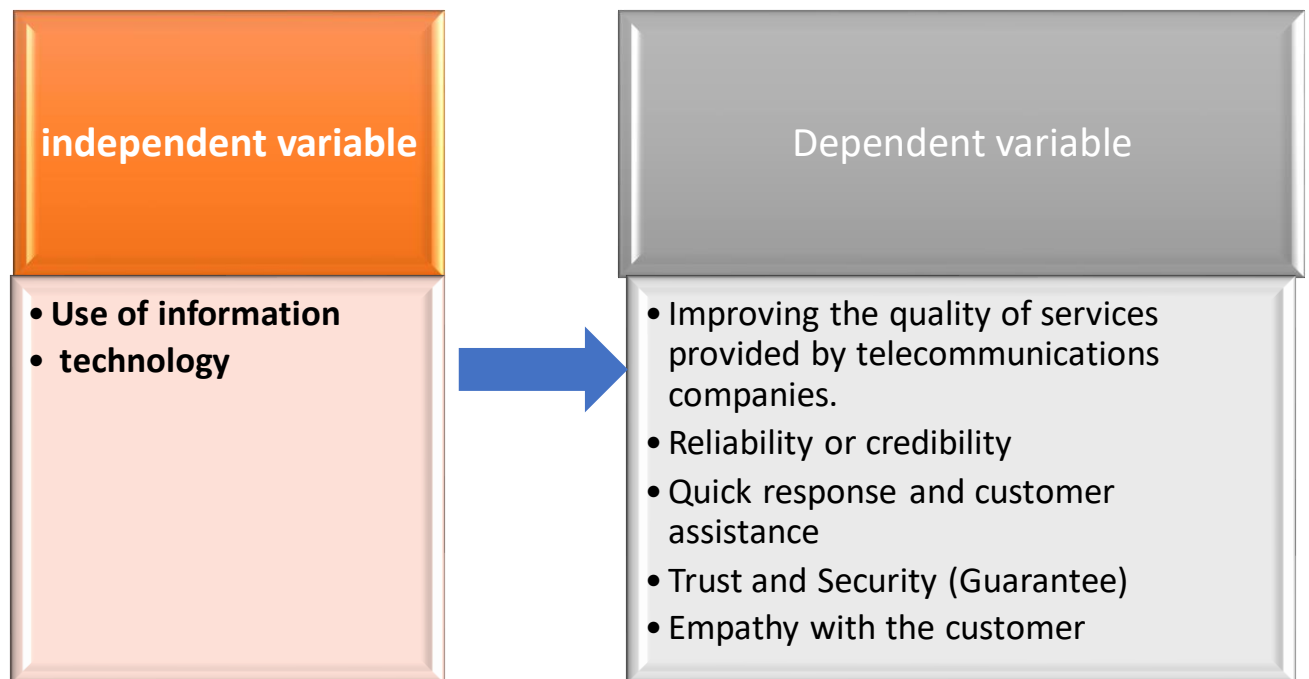


Figure 1 1research variables . researcher

1.8. Scope of The Study

- Spatial scope: The research community consists of employees of telecommunications company(STC)
- Time scope: The study took place during the academic year 2024 in period from 24/2/2024 to 1/8/2024

1.9. The Project Structure

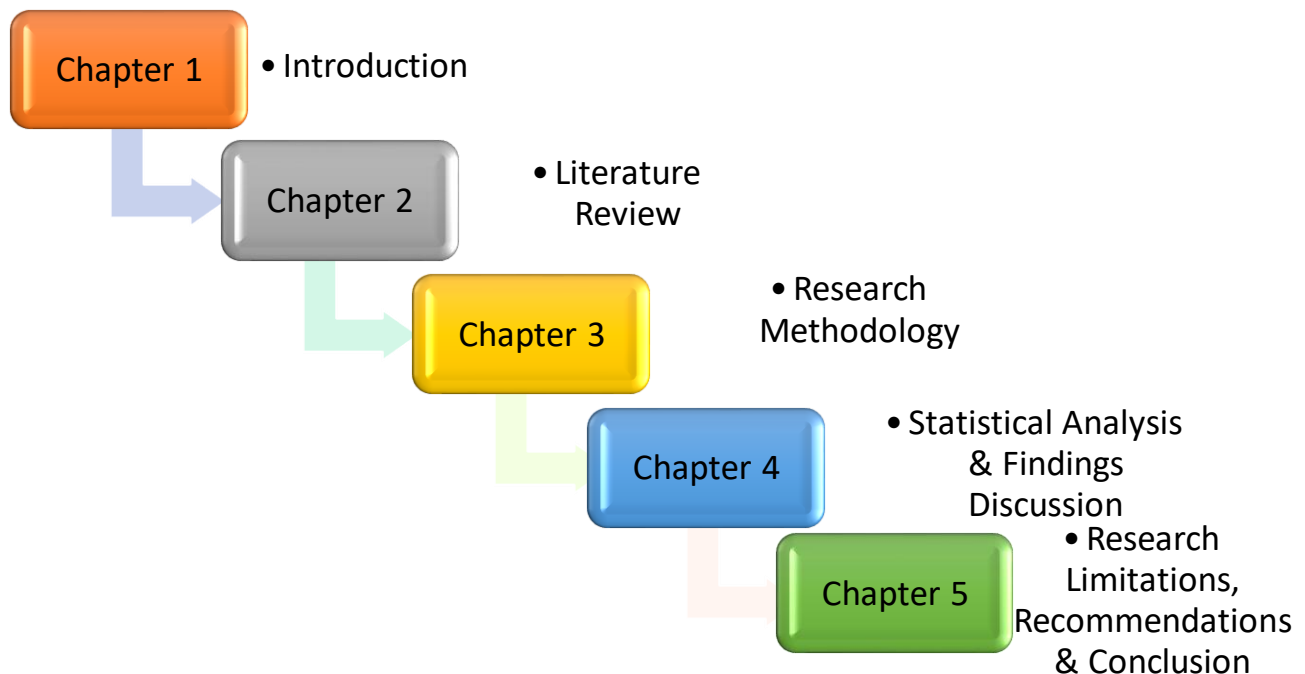


Figure 2 research structure . researcher

Chapter 1 (Introduction) : This chapter sets the stage for the research by providing an overview of the Saudi telecommunications sector and the role of information technology (IT) in enhancing service quality. It details the background of the study, outlines the research problem and its significance, and presents the research questions, objectives, and hypotheses. The chapter also introduces the research model and defines the scope of the study.

Chapter 2 (Literature Review) : This chapter reviews existing literature on the use of IT in the telecommunications industry, focusing on its impact on service quality. It discusses the independent variable (use of IT) and dependent variables (dimensions of service quality such as reliability, responsiveness, assurance, empathy, and tangible materiality). The chapter

explores the relationship between these variables, citing various studies and theories to build a theoretical framework for the research.

Chapter 3 (Research Methodology) : This chapter describes the research design and methodology used to investigate the relationship between IT and service quality in Saudi telecom companies. It covers the operational definitions of research variables, research design (research onion), population and sampling methods, data collection methods, types of data, and statistical analysis procedures. The chapter ensures that the research process is rigorous and replicable.

Chapter 4 (Statistical Analysis & Findings Discussion) : This chapter presents the results of the statistical analysis and discusses the findings in relation to the research questions and hypotheses. It includes descriptive statistics for the research sample, validity and reliability tests for the questionnaires, and detailed analysis of the research variables. The chapter concludes with a discussion of the findings, highlighting significant relationships and drawing implications for the telecom industry.

Chapter 5 (Research Limitations, Recommendations & Conclusion) : The final chapter addresses the limitations of the research and offers recommendations for future studies. It discusses practical and theoretical implications of the findings and provides actionable insights for telecom companies to leverage IT for improving service quality. The chapter concludes by summarizing the key contributions of the research and its relevance to the Saudi telecommunications sector.

Chapter 2: Literature Review

2.1 Introduction

The Saudi Arabian telecommunications industry has evolved rapidly over the past decades, propelled by strategic IT investments aimed at improving service quality and meeting growing customer expectations. This transformation is underscored by the adoption of IT solutions across key telecom operators such as Saudi Telecom Company (STC), Mobily, and Zain KSA. These companies have leveraged IT to streamline operations, enhance customer engagement, and introduce innovative services

2.2 The independent variable

The independent variable in this study is the use of information technology (IT) within Saudi telecommunications companies. IT encompasses various technologies and systems implemented to improve service delivery, operational efficiency, and customer satisfaction. This includes CRM systems for managing customer interactions and data, advanced network management systems to enhance reliability and performance, and data analytics tools for deriving insights into customer behavior and operational performance. Additionally, IT facilitates the deployment of sophisticated billing systems that ensure accuracy and transparency, thereby enhancing customer trust and satisfaction. The strategic integration of IT in telecom operations is essential for achieving competitive advantage, meeting customer expectations, and driving continuous improvements in service quality.

2.3 The dependent variables

The dependent variables in this research focus on various dimensions of service quality within Saudi telecommunications companies. Tangible materiality is a critical dimension that reflects the physical aspects of service delivery, such as infrastructure quality and equipment reliability. Reliability or credibility measures the consistency and trustworthiness of service provision, ensuring that telecommunications services meet customer expectations without. Responsiveness and customer assistance gauge the promptness and effectiveness of telecom companies in addressing customer needs and resolving issues promptly. Trust and security (guarantee) pertain to customers' confidence in the security of their data and continuity of service provision, which are crucial for maintaining customer loyalty and satisfaction. Finally,

empathy assesses the telecom companies' ability to understand and respond to customers' emotional needs and preferences, enhancing overall customer experience and satisfaction .

2.4 The relationship between the independent and the dependent variables

- (Alshawhi, Missi, and Irani ,2011) explored organizational, technical, and data quality factors influencing CRM adoption from the SMEs perspective (Industrial Marketing Management, 40(3), 376-383). Their study provides insights into the critical factors that affect the successful implementation of CRM systems in small and medium-sized enterprises. The integration of information technology (IT) within telecommunications has revolutionized service delivery, enhancing overall service quality and customer satisfaction. This study examines how IT implementation, particularly in customer relationship management (CRM) systems, network management, and data analytics, contributes to improved service reliability, responsiveness, assurance, empathy, and tangible materiality. Using case studies from leading telecom companies, including Verizon, AT&T, and BT Group, this research identifies key IT applications that drive service quality enhancements. The findings suggest that strategic IT investments and continuous technological advancements are critical for maintaining competitive advantage and meeting evolving customer demands.
- (Al-Mudimigh and Ullah , 2011) discussed the integration of business intelligence with corporate strategic management, emphasizing its role in enhancing decision-making processes and strategic outcomes .This paper explores the impact of information technology on service quality in emerging markets, with a focus on the telecommunications industry. By analyzing data from telecom operators in Brazil, India, and South Africa, the study highlights how IT integration enhances network reliability, customer support, and service personalization. The research underscores the importance of robust IT infrastructure and skilled workforce in achieving superior service quality. The findings reveal that despite significant challenges, such as regulatory constraints and technological disparities, IT remains a key driver of service quality improvement in emerging markets.

- (Ernst & Young , 2014) highlighted the transformative impact of big data on business operations, illustrating how data analytics reshape competitive strategies and operational efficiencies ("Big data: Changing the way businesses compete and operate," EYGM Limited).This research investigates customer perceptions of IT-enabled services in the telecom industry, focusing on how IT applications influence service quality dimensions like reliability, assurance, and empathy. The study uses survey data from customers of major telecom companies in the United States, analyzing the relationship between IT use and customer satisfaction. Results indicate that effective use of IT in service delivery leads to higher customer satisfaction, particularly in terms of reliability and responsiveness. The study recommends that telecom companies continue to innovate and adapt their IT strategies to meet changing customer expectations.
- (Al-Turki, Al-Homaidhi, and Al-Dossari ,2020) examined the influence of 5G technology on the telecommunications industry in Saudi Arabia, underscoring its potential to revolutionize service delivery and customer experiences .This paper examines the role of IT-driven innovations in improving service quality in the telecommunications sector. Focusing on advancements such as 5G technology, Internet of Things (IoT), and artificial intelligence (AI), the study explores how these technologies enhance service delivery and customer experience. Case studies from telecom giants like China Mobile, Vodafone, and T-Mobile highlight successful IT integration strategies that have led to significant improvements in service reliability, responsiveness, and customer satisfaction. The research concludes that continuous investment in IT innovation is essential for telecom companies to remain competitive and meet future service demands.
- (Alotaibi ,2014) investigated information security management practices in Saudi Arabian telecom companies, emphasizing the importance of robust cybersecurity measures in safeguarding customer data and ensuring service reliability .In the telecommunications industry, cybersecurity is critical for maintaining service assurance and customer trust. This study explores how IT solutions in cybersecurity enhance the assurance aspect of service quality. Through a detailed analysis of cybersecurity practices in telecom companies like AT&T and Deutsche Telekom, the research identifies key IT measures that protect customer data and ensure service continuity. The findings emphasize the need for ongoing

cybersecurity investments and the implementation of advanced security protocols to mitigate risks and enhance customer confidence in telecom services.

2.5 Conclusion

The above abstracts collectively highlight the transformative role of IT in enhancing service quality in the telecommunications sector. These studies underscore the importance of strategic IT investments, innovative technological applications, and robust cybersecurity measures in achieving superior service delivery and customer satisfaction

Chapter 3: Research Methodology

3.1 Introduction

the use of information technology (IT) and the improvement of service quality in telecommunications companies in Saudi Arabia. The chapter details the operational definitions for research variables, research design, population and sampling methods, data collection methods, types of data, and statistical analysis procedures. The goal is to provide a clear and replicable methodology for the study, ensuring the reliability and validity of the research findings.

3.2 Operational definitions for research variables

Information Technology (IT): Refers to the use of systems, software, and hardware to manage and process information within telecommunications companies. Key components include customer relationship management (CRM) systems, network management systems, data analysis tools, and cybersecurity measures.

Service Quality: It is evaluated through various dimensions including tangibles, reliability, responsiveness, trust, security (assurance) and empathy. Each dimension represents a different aspect of the overall quality of services provided by telecommunications companies.

3.3 Research design (research onion)



Figure 3 project design : researcher

3.4 Research population & Sampling methods and technique

Population: The research population consists of employees from major telecommunications companies in Saudi Arabia, such as Saudi Telecom Company (STC).

Sampling Methods: A stratified random sampling method is employed to ensure that different departments and job roles within the companies are adequately represented.

Sample Size: A sample size of 77 employees is targeted to provide a representative and statistically significant dataset.

3.5 Data collection method

Primary Data: Data is collected using structured questionnaires distributed to the sampled employees. The questionnaire is designed to measure the use of IT and its impact on various dimensions of service quality.

Secondary Data: academic literature to provide context and support for the primary data.

3.6 Types of data

Quantitative Data: Numerical data collected from the survey responses is used to perform statistical analysis. This data includes metrics related to IT usage, service quality dimensions, and demographic information of the respondents.

Qualitative Data: Open-ended questions in the questionnaire provide qualitative insights into employee perceptions and experiences related to IT and service quality.

3.7 Statistical analysis procedures

After collecting data, it is essential to analyze the information gathered to draw meaningful conclusions. As, the Statistical Package for the Social Sciences (SPSS), specifically version 28, were used to analyze the collected data. The sample profile test was conducted, via descriptive analysis, to gain insights into the characteristics of the sample population. It helps researchers understand the demographics, preferences, and other relevant information about the individuals involved in the study. Validity and reliability tests are crucial in ensuring that the data collected is accurate and consistent. Validity tests (Exploratory factor analysis) to determine if the research instruments measure what they are intended to measure, while reliability tests (Cronbach's Alpha test) assess the consistency of results over time.

The student conducted descriptive statistics for the research variables, that provide a summary of the main characteristics of the data collected. It includes measures such as mean, median, mode, standard deviation, and variance, which help in understanding the distribution and patterns within the dataset. In order to test the research hypotheses, simple and multiple linear regression tests were employed to test research hypotheses and examine the relationships between variables. These tests help researchers determine the extent to which one variable predicts another, providing valuable insights into the research questions at hand. By utilizing these various statistical analyses within SPSS version 28, researchers can effectively analyze their data and derive meaningful interpretations to advance their research objectives.

3.8 Conclusion

This chapter has detailed the research methodology for investigating the impact of IT on service quality in Saudi telecommunications companies. By defining operational variables, employing a structured research design, and outlining rigorous data collection and analysis

methods, the study aims to provide reliable and valid insights into the role of IT in enhancing service quality. The following chapters will present the results of the statistical analysis and discuss the implications of the findings.

Chapter 4: Statistical Analysis & Findings discussion

4.1 Introduction

In the present rapidly advancing digital environment, the use of information technology has become one of the most important factors that contribute to added value in services across industries through the effective use of information. This chapter presents empirical analysis to test data that provides evidence of the relationship between levels of information technology and service quality in a telecommunication company. The data were collected using a structured questionnaire and analyzed with SPSS version 22.0; it used several statistical methods like descriptive statistics, linear correlation, regression analysis. Get access to more exclusive Technology content by becoming a monthly subscriber.

The chapter at the initial stage depicted descriptive statistics concerning research variables that gave meaning to respondent views regarding information technology use within the company. This is also where questionnaire reliability was considered to ensure that results obtained would be repeatable and consistent.

4.2 Sample profile (descriptive statistics for research sample)

To test the validity of the hypotheses or refute them, the researcher entered the data into the computer using a computer Processed on the statistical program SPSS version 22.0 The researcher also tested the research hypotheses using descriptive statistics and the linear correlation coefficient And the regression coefficient. The following is an explanation of the descriptive statistics that the researcher extracted for all research variables in: Telecommunications company under study.

Table 1 Results of descriptive statistics for the questions of the independent variable (X) use of information technology)

Question	Duplicates					average	Standard deviation	Degree of approval
	Not agree hardly	Not agree	ok	neutral	Agree hardly			
1		4	6	35	32	4.23	0.81	high
2	2		2	39	34	4.34	0.77	high
3	2		20	40	15	3.86	0.82	high
4	2	1	12	45	18	4.00	0.79	high
5	2	3	78	38	28	4.16	0.86	high
6		3	7	40	27	4.18	0.76	high
7	1	3	13	38	22	4.25	0.75	high

8	1	1	13	38	22	4.00	0.86	high
9	2	4	13	41	20	3.99	0.85	high
10	2	4	10	36	25	4.01	0.95	high
11			8	31	34	4.23	0.84	high
The overall average of the variable						4.11	0.82	high

Source: Prepared by the researcher, building On the results of Statistical analysis using SPSS program

The attitudes of the research sample individuals indicate a high degree of agreement with the statements of the information technology use variable. The agreement was high for the statement, “The concept of information technology is a clear concept at the level of your company,” with an arithmetic mean of 4.23, as well as high agreement for the statement, “There is conviction and support from senior management in Your company uses information technology with a arithmetical mean of 4.34, and a high degree of approval for the statement: The workers in your company have the skills required to use information technology well, with a arithmetical mean of 3.86, and a high degree of approval for the statement: The workers in your company accept the idea of using information technology, with an arithmetic mean of 4, and a high degree of approval for the statement: “You have Your company has an infrastructure prepared to use information technology well, with a mean of 4.16, and a high degree of approval for the statement “Your company uses information technology in completing its various tasks,” with a mean of 4.18, and a high degree of approval for the statement “Your company works to develop capabilities in the field of information technology with the aim of improving performance.” 4.25, and a high degree of approval for the statement “Your company works to quickly transfer information between the various departments and the public administration, relying on information technology,” with a arithmetical mean of 4, and a high degree of approval for the statement, “Your company’s management is keen to train employees on how to use information technology and everything new in it,” with a arithmetical mean of 3.99, and a degree of approval. High on the statement “Your company uses information technology in an advanced manner and keeping up with everything new” with an arithmetic average of 4.01, and a high degree of approval for the statement “Your company has a website that is easy to access and known by customers” with an arithmetic average of 4.23, and the overall average for the information technology use variable was approved with a degree High, with a mean of 4.11.

4.3 Validity & reliability tests for the questionnaires

The reliability of the questionnaire was verified through the Cronbach Alpha method. The reliability of the questionnaire means that it gives the same result if it is redistributed more than once under the same conditions. The conditions are: stability in the results and not changing them significantly if it was distributed to the sample members several times. During a certain period of time, the results of calculating the alpha coefficient for each axis of each scale were. The study tool is as shown in the following table:

Table 2 test according to Cronbach's alpha

Scale	Dimensions	Number of phrases	Number of phrases	Result
Use Information technology	Use of information technology	11	.921	Greater than 0.70
Quality of service	tangibility	7	.753	Greater than 0.70
	Reliability	6	.889	
	Speed of response	8	.737	
	Safety	6	.818	
	Empathy	6	.829	
Total		33	0.8245	

Source: Prepared by the researcher based on data analysis according to SPSS

The table shows that the reliability coefficients for all axes of the study are good and statistically acceptable. Because it is greater than 0.60, as it reached a minimum of 0.70 question sets. Which means that the questionnaire Statistically, which the user indicated in the research has an acceptable reliability coefficient, which is higher than the acceptable value to it (Narver and Slater, 1990; P 5). To test the validity of the hypotheses or refute them, the researcher entered the data into the computer using a computer.

Processed on the statistical program SPSS version 22.0 The researcher also tested the research hypotheses using descriptive statistics and the linear correlation coefficient And the regression coefficient. The following is an explanation of the descriptive statistics that the researcher extracted for all research variables in:

Telecommunications company under study, to be greater than (0.70).

4.4. Descriptive statistics for research variables (answer research questions)

Table 3 Results of descriptive statistics for the dependent variable questions (1Y Tangibility)

Question	Duplicates					average	Standard deviation	Degree of approval
	Notagree hardly	Not agree	ok	neutral	Agree hardly			
1	3	6	13	65	25	3.91	.89	high
2		7	22	69	14	3.80	.73	high
3		6	24	60	22	3.87	.78	high
4	2	6	36	54	14	3.64	.83	high
5	2	12	38	44	16	3.53	.92	high
6	2	15	27	52	16	3.58	.95	high
7		10	24	56	22	3.80	.85	high
The overall mean of the variable 1Y						3.73	.85	high

Source: Prepared by the researcher, based on the results of statistical analysis using the SPSS program

The attitudes of the research sample members indicate a high degree of agreement with the variable statements after the tangible physical aspects, as agreement was high for the statement that the appearance of the company's employees is decent, with a mean of 3.91, and approval was high for the statement that the company uses modern, appropriate technological equipment and devices, with a mean of 3.80. Approval was high for the statement "The equipment and buildings have a beautiful and distinctive appearance" with a mean of 3.87. Approval was high for the statement

“The company’s interior design provides a comfortable atmosphere for customers” with a mean of 3.64. Approval was high for the statement “The waiting rooms in the company are comfortable” with a mean of 3.64. 3.53, and agreement was high The statement that the company's various sites are suitable for customers and can be easily accessed had a mean of 3.58, and approval was high for the statement that the company cares about cleanliness, lighting, air conditioning, and providing an appropriate physical environment, with a mean of 3.80. The variable Y1, which measures the tangible physical aspects, had a high degree of agreement. This has an arithmetic mean of 3.73

Table 4 Results of descriptive statistics for the dependent variable questions (Y2 Reliability)

Question	Duplicates					average	Standard Deviation	Degree of approval
	Not agree hardly	Not agree	ok	neutral	Agree hardly			
1	7	21	33	47	4	3.17	0.98	medium
2	4	17	32	53	6	3.35	0.92	medium
3	5	18	38	36	15	3.33	1.04	medium
4	4	8	37	48	15	3.55	0.93	high
5	2	8	31	62	9	3.6	0.80	high
6	2	19	29	50	12	3.45	0.95	medium
The overall mean of the variable Y2						3.40	0.93	medium

Source: Prepared by the researcher, based on the results of statistical analysis using the SPSS

The attitudes of the research sample members indicate a degree of agreement from medium to high on the statements of the reliability or credibility variable, as approval was moderate for the statement that the company provides error-free services, with a mean of 3.17, and approval was moderate for the statement that the company performs its services on time without delay. This had a mean of 3.35, and agreement was moderate On the statement: The company is characterized by

its ability to provide service without interruption, with a mean of 3.33. Approval was high for the statement: The company is keen to solve problems for customers regarding the services provided to them easily and conveniently, with an arithmetic mean of 3.55. Approval was high for the statement: The company is committed to providing the services it promised. There was a mean degree of approval for the statement “The company performs the services correctly the first time” with a mean of 3.45, and the variable 72, which measures the dimension of reliability or credibility, had a medium degree of approval with a mean of 3.40

Table 5 Results of descriptive statistics for the dependent variable questions (Y3 Response)

Question	Duplicates					average	Standard Deviation	Degree of approval
	Not agree	Not agree	ok	neutra l	Agree hardly			
1		3	24	74	11	3.83	0.62	high
2		3	22	76	11	.3.84	0.61	high
3	2	9	44	44	10	3.45	0.83	medium
4	2	13	44	44	14	3.49	0.92	medium
5	5	9	31	31	12	3.32	0.93	medium
6	3	8	62	62	21	3.80	0.91	high
7	5	6	64	64	10	3.60	0.89	high
8	8	10	38	35	21	3.45	0.11	Medium
The overall mean of the variable Y3						3.59	0.85	high

Source: Prepared by the researcher, based on the results of statistical analysis using the SPSS

The attitudes of the research sample individuals indicate a degree of agreement from medium to high on the statements of the variable speed of response and customer assistance. The approval was high for the statement that the company’s employees are fully prepared to provide assistance to you, with a mean of 3.83, and approval was high for the statement that the company’s employees seek to help you in Solve the problems you face in providing the service, with a mean of 3.84. The

approval was medium for the statement that the company's employees respond to customers' needs, regardless of how busy they are, with a mean of 3.45. Approval was medium for the statement that the company's management cares about customers' complaints and inquiries, with a mean of 3.49. Approval was moderate for the statement "Some procedures are shortened by employees with the aim of speeding up customer service" with a mean of 3.32. Approval was high for the statement "employees provide service to customers according to the priority of their entry into the company and without exceeding it" with an arithmetic mean of 3.80. Approval was high for the statement "It is available in the company." Instructive boards when providing services with the aim of speeding up the service, with a mean of 3.60, and agreement was moderate for the statement "There is a sufficient number of employees who provide service to customers." This has an arithmetic mean of 3.45

5. The variable Y3, which measures the dimension of response speed and customer assistance, had a high degree of agreement, with an arithmetic mean of 3.59

Table 6 Results of descriptive statistics for the dependent variable questions (Y4 Security)

Question	Duplicates					average	Standard deviation	Degree of approval
	Not agree	Not agree	ok	Neutral	Agree hardly			
1	1	3	34	62	12	3.72	0.72	high
2		6	32	59	15	3.74	0.75	high
3		7	34	56	15	3.70	0.77	high
4	3	10	37	50	12	3.51	0.90	high
5	3	7	26	47	29	3.82	0.97	high
6	4	12	32	46	18	3.55	1	high

The overall mean of the variable Y4	3.67	0.85	high
-------------------------------------	------	------	------

Source: Prepared by the researcher, based on the results of statistical analysis using the SPSS

The attitudes of the research sample members indicate a high degree of agreement with the statements of the trust and security (warranty) variable, as agreement was high with the statement The behavior of employees in the company makes you trust them.

With an arithmetic mean of 3.72, approval was high for the statement “You feel safe when dealing with the company’s employees,” with an arithmetic mean of 3.74, and approval was high for the statement “The behavior of the company’s employees is characterized by transparency and clarity,” with an arithmetic mean of 3.70, and approval was high for the statement “The company’s employees” They have the knowledge and high experience to answer all your inquiries, with a mean of 3.51. There was high approval for the statement that the company maintains confidentiality of private information. With the customer, with an arithmetic mean of 3.82, approval was high for the statement: “You feel the company is keen.” Customer communications must be confidential, with an arithmetic mean of 3.55

The variable Y4, which measures the dimension of trust and security (guarantee), has a high agreement with an arithmetic mean of 3.67

Table 7 Results of descriptive statistics for the dependent variable questions (Y5 Empathy)

Question	Duplicates					average	Standard deviation	Degree of approval
	Not agree	Not agree	ok	neutral	Agree Hardly			
1	3	16	41	39	13	3.38	0.96	medium
2	2	19	28	49	14	3.48	0.97	medium
3	7	12	45	38	10	3.28	0.99	medium

4	2	14	42	44	19	3.41	0.88	medium
5	4	14	45	40	9	3.32	0.92	medium
6	2	2	39	53	16	3.70	0.80	high
The overall mean of the variable Y5						3.42	0.92	medium

Source: Prepared by the researcher, based on the results of statistical analysis using the SPSS

The attitudes of the research sample members indicate a moderate degree of agreement with the statements of the variable of empathy with the customer, as agreement was moderate with the statement that the company gives the customer personal attention, with a mean My calculation was 3.38, and there was medium agreement with the statement that the company's working hours are appropriate for all Customers, with a mean of 3.48. Approval was medium for the statement "The company has the customer's interest as one of its first interests and has priority," with a mean of 3.28. Approval was medium for the statement, "The company understands the specific needs of customers," with a mean of 3.41. Approval was medium for the statement, "The company cares." with customer problems individually, with a mean of 3.32, and approval was high for the statement that the company and its employees are committed to providing the best services to customers, with a mean of 3.70. The variable Y5, which measures the dimension of empathy with the customer, has a medium degree of agreement with an arithmetic mean Its value is 3.42

4.5 Testing Hypotheses & Findings Discussion

The first hypothesis

There is a significant **relationship** between the use of information technology and the dimension of tangible physical aspects as one of the dimensions of the quality of services provided in telecommunications company. The result of the correlation and regression for the first sub-hypothesis resulting from the correlation analysis of the relationship between the independent variable The other

Table 8 Model Summary.

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.673a	.453	.436	.27774

Source: Prepared by the researcher, building On the results of Statistical analysis using SPSS program

Table 9 ANOVAa (a. Dependent Variable: Improving the quality of service, b. Predictors: (Constant) , technology use)

Model	Sum of Squares	Df	Mean Square	F	Sig.
Regression	2.108	1			
Residual	2.546	75	2.108	27.333	.000a
Total	4.654	76	.077		

Source: Prepared by the researcher, building On the results of Statistical analysis using SPSS program

Table 10 Coefficientsa (a. Dependent Variable: y1)

Model	Unstandardized Coefficients		Standardized Coefficients	T	Sig.
	B	Std. Error	Beta		
Constant	1.010	.489		2.066	0.47
X	.745	.142	.673	5.228	.000

Source: Prepared by the researcher, based on the results of statistical analysis using the SPSS

It is clear from the Anova analysis of variance table that the validity of the model for testing the first sub-hypothesis is consistent, based on the higher value of the calculated (A) of

(27.333) than its tabulated value of (6.95), which is significant at the level of significance (0.000), which is less than the level of significance (0.05, as shown by The previous table shows that the use of information technology affects the dimension of the tangible physical aspects as one of the dimensions of the quality of services provided in the telecommunications company under study, as the value of the Beta coefficient for this variable was (0.673), and in terms of the calculated (a) value of (5.228), which is greater than the t value. The tabular value is (2.58) at the significance level (0.05), and since the value of slope B is significant and equal to (0.745), we reject The first null hypothesis and we accept the first alternative hypothesis, and we acknowledge that there is a significant relationship between the independent and dependent variables, meaning that there is a significant relationship between the use of information technology and the dimensions

Tangible materiality as one of the dimensions of the quality of services provided in telecommunications company.

The second hypothesis

There is a significant relationship between the use of information technology and the reliability or credibility dimension as one of the dimensions of the quality of services provided in telecommunications company.

The results of the correlation and regression were for the second sub-hypothesis Resulting from the correlation analysis of the relationship between the independent variable

Table 11 Model Summary.

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.645a	.416	.398	.36849

Source: Prepared by the researcher, based on the results of statistical analysis using the SPSS

Table 12 ANOVAa (a. Dependent Variable: Improving the quality of service, b. Predictors: (Constant) , technology use)

Model	Sum of Squares	Df	Mean Square	F	Sig.
Regression	3.191	1			
Residual	4.481	75	3.191	23.498	.000a
Total	7.671	76	.136		

Source: Prepared by the researcher, based on the results of statistical analysis using the SPSS

Table 13 Coefficientsa (a. Dependent Variable: y2)

Model	Unstandardized Coefficients		Standardized Coefficients	T	Sig.
	B	Std. Error	Beta		
Constant	.434	. 648		.669	.508
X	. 916	. 189	. 645	4.848	. 000

Source: Prepared by the researcher, based on the results of statistical analysis using the SPSS

It is clear from the Anova analysis of variance table that the validity of the model for testing the second sub-hypothesis is consistent, based on the higher value of the calculated (a) of (23.498) than its tabulated value of (6.95), which is significant at the level of significance (0.000) and is less than the level of significance (0.05). It was shown from the previous table that the use of information technology affects the reliability or credibility dimension as one of the dimensions of the quality of services provided in the telecommunications company under study, as the value of the Beta coefficient for this variable was (0.645), and in terms of the calculated (4) value of (4.448), which is greater than The tabular t value of (2.58) is at a significance level of (0.05), and since the value of slope B is significant and equal to (0.916), we reject the second null hypothesis and accept the second alternative hypothesis, and

acknowledge the existence of a significant relationship between the independent and dependent variables, that is, there is a significant relationship between Information technology use and reliability Or credibility as one of the dimensions of the quality of services provided by telecommunications company.

The third hypothesis

There is a significant relationship between the use of information technology and the dimension of response speed and customer assistance As one of the dimensions of the quality of services provided in telecommunications company.

The result of the correlation and regression for the third sub-hypothesis resulting from the correlation analysis of the relationship between the independent variable An increase in one variable will be accompanied by an increase in the other variable.

Table 14 Model Summary.

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	. 761a	. 579	. 566	. 24582

Source: Prepared by the researcher, based on the results of statistical analysis using the SPSS

Table 15 ANOVAa (a. Dependent Variable: Improving the quality of service, b. Predictors: (Constant) , technology use)

Model	Sum of Squares	Df	Mean Square	F	Sig.
Regression	2.744	1	2.744		
Residual	1.994	75	.060	45.410	.000a
Total	4.738	76			

Source: Prepared by the researcher, based on the results of statistical analysis using the SPSS

Table 16 Coefficientsa (a. Dependent Variable: y3)

Model	Unstandardized Coefficients		Standardized Coefficients	T	Sig.
	B	Std. Error	Beta		
Constant	.638	.432		1.475	.150
X	.850	.126	.761	6.739	.000

Source: Prepared by the researcher, based on the results of statistical analysis using the SPSS

It is clear from the Anova analysis of variance table that the model is valid for testing the third sub-hypothesis based on the higher value of the calculated (f) of (45.410) than its tabulated value of (6.95), which is significant at the level of significance (0.000) and is less than the level of significance (0.05). It was shown from the previous table that the use of information technology affects the dimension of speed of response and customer assistance as one of the dimensions of the quality of services provided in the telecommunications company under study, as the value of the Beta coefficient for this variable was (0.761), and in terms of the calculated (A) value of (6.739), which is the largest From the tabular t value of (2.58) at a significance level of (0.05), and since the value of slope B is significant and equal to (0.850), we reject the third null hypothesis and accept the third alternative hypothesis, and acknowledge the existence of a significant relationship between the independent and dependent variables, meaning that there is a significant relationship Between the use of information technology and the dimension of speed of response and customer assistance as one of the dimensions of the quality of services provided in telecommunications company.

The fourth hypothesis

There is a significant relationship between the use of information technology and the dimension of trust and security (guarantee) as one of the dimensions of the quality of services provided in telecommunications company.

The result of the correlation and regression for the fourth sub-hypothesis resulting from the correlation analysis of the relationship between the independent variable The other.

Table 17 Model Summary.

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.628a	.394	.329	.243

Source: Prepared by the researcher, based on the results of statistical analysis using the SPSS

Table 18 ANOVAa (a. Dependent Variable: Improving the quality of service, b. Predictors: (Constant) , technology use)

Model	Sum of Squares	Df	Mean Square	F	Sig.
Regression	3.191	1	.329		
Residual	4.481	75	3.191	21.418	.000a
Total	7.671	76	.136		

Source: Prepared by the researcher, based on the results of statistical analysis using the SPSS

Table 19 Coefficientsa (a. Dependent Variable: y4)

Model	Unstandardized Coefficients		Standardized Coefficients	T	Sig.
	B	Std. Error	Beta		
Constant	.636	.412		1.475	.150
X	.841	.126	.761	6.739	.000

Source: Prepared by the researcher, based on the results of statistical analysis using the SPSS

It is clear from the Anova analysis of variance table that the model is valid for testing the fourth sub-hypothesis, based on the higher value of calculated (1) of (21.418) than its tabulated value

of (6.95), which is significant at the level of significance (0.000), which is less than the level of significance (0.05). It was shown from the previous table that the use of information technology affects the security dimension as one of the dimensions of the quality of services provided in the telecommunications company under study, as the value of the Beta coefficient for this variable was (0.761) and in terms of the calculated (1) value of (6.739), which is greater than the tabular value of (6.739). (2.58) at a significance level of (0.05), and since the value of slope B is significant and equal to (0.841)

With this result, we reject the fourth sub-null hypothesis and accept the fourth sub-hypothesis, which states that there is a significant relationship between the use of information technology and the dimension of trust and security (warranty) as one of the dimensions of the quality of services provided in telecommunications company.

The fifth hypothesis

There is a significant relationship between the use of information technology and the dimension of empathy for the customer as one of the dimensions of the quality of services provided in telecommunications company.

The correlation and regression results for the fourth hypothesis were the result From the correlation analysis of the relationship between the independent variable

Table 20 Model Summary.

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	. 711a	. 505	. 431	. 36251

Source: Prepared by the researcher, based on the results of statistical analysis using the SPSS

Table 21 ANOVAa (a. Dependent Variable: Improving the quality of service, b. Predictors: (Constant) , technology use)

Model	Sum of Squares	Df	Mean Square	F	Sig.
-------	----------------	----	-------------	---	------

Regression	2.744	1			
Residual	1.884	75	2.648	41.13	.000a
Total	4.538	76	.060		

Source: Prepared by the researcher, based on the results of statistical analysis using the SPSS

Table 22 Coefficientsa (a. Dependent Variable: y5)

Model	Unstandardized Coefficients		Standardized Coefficients	T	Sig.
	B	Std. Error	Beta		
Constant	1.010	. 449		2.096	.047
X	. 715	. 142	. 663	5.128	. 000

Source: Prepared by the researcher, based on the results of statistical analysis using the SPSS

It is clear from the Anova analysis of variance table that the model is valid for testing the fifth sub-hypothesis based on the higher value of the calculated (a) of (41.13) than its tabulated value of (6.95), which is significant at the level of significance (0.000) and is less than the level of significance (0.05). It was shown from the previous table that the use of information technology affects the dimension of empathy with the customer as one of the dimensions of the quality of services provided in the telecommunications company under study, as the value of the Beta coefficient for this variable was (0.715), and in terms of the calculated (A) value of (5.128), which is greater than The tabular t value of (2.58) is at a significance level of (0.05), and since the value of slope B is significant and equals (0.715), with this result we reject the fifth sub-null hypothesis, and accept the fifth alternative sub-hypothesis, which states that there is a significant relationship between the use of information technology and the dimension of Empathy with the customer as one of the dimensions of the quality of services provided in telecommunications company.

Testing the main hypothesis

There is a significant relationship between the use of information technology and improving the quality of services provided in telecommunications company.

The result of the correlation and regression for the main hypothesis represented by the relationship between the independent variable

Table 23 Model Summary.

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.493a	.243	.237	.3221

Source: Prepared by the researcher, based on the results of statistical analysis using the SPSS

Table 24 ANOVAa (a. Dependent Variable: Improving the quality of service, b. Predictors: (Constant) , technology use)

Model	Sum of Squares	Df	Mean Square	F	Sig.
Regression	2.744	1	2.648	37.33	.000a
Residual	1.884	75	.060		
Total	4.538	76			

Source: Prepared by the researcher, based on the results of statistical analysis using the SPSS

Table 25 Coefficientsa (a. Dependent Variable: Improving the quality of service)

Model	Unstandardized Coefficients	Standardized Coefficients	T	Sig.
-------	-----------------------------	---------------------------	---	------

	B	Std. Error	Beta		
Constant	2.349	.449		1.996	.041
X	.453	.142	.663	6.11	.000

Source: Prepared by the researcher, based on the results of statistical analysis using the SPSS

It is clear from the Anova analysis of variance table that the validity of the model to test the main hypothesis is consistent, based on the higher value of the calculated (A) of (37.33) than its tabulated value of (6.95), which is significant at the level of significance (0.000) and is less than the level of significance (0.05), as shown. From the previous table, the use of information technology affects improving the quality of services provided in the telecommunications company under study, as the value of the Beta coefficient for this variable was (0.663), and in terms of the calculated (t) value of (6.11), which is greater than the tabular value of (2.58).) at a significance level of (0.05), and since the value of slope B is significant and equal to (0.453),

With this result, we reject the main null hypothesis, and accept the main alternative hypothesis, which states that there is a significant relationship between the use of information technology and improving the quality of services provided in the country.

Telecom company.

4.6 Conclusion

In conclusion, the study confirms that there is a significant positive relationship between the use of information technology and the various dimensions of service quality in the telecommunications company. The company's use of technology has a measurable impact on improving tangible physical aspects, reliability, responsiveness, security, and to some extent, empathy in customer interactions.

Chapter five: Research limitations, Recommendations & Conclusion

5.1 Research Results

In light of the field study conducted by the researcher on telecommunications companies in Saudi Arabia, and through the previous presentation of the statistical analysis, and testing the research hypotheses, the researcher was able to extract the following results, which are presented below:

All Cronbach Alpha values for all study variables are higher than (0.70), which means that all study measures are characterized by internal consistency of their statements in telecommunications companies.

Through the results of the first sub-hypothesis test, it was found that there is a significant relationship between the use of information technology and the dimension of tangible material aspects as one of the dimensions of the quality of services provided in telecommunications companies.

Through the results of the second sub-hypothesis test, it was found that there is a significant relationship between the use of information technology and the dimension of reliability or credibility as one of the dimensions of the quality of services provided in telecommunications companies.

Through the results of the third sub-hypothesis test, it was found that there is a significant relationship between the use of information technology and the dimension of speed of response and customer assistance as one of the dimensions of the quality of services provided in telecommunications companies.

Through the results of the fourth sub-hypothesis test, it was found that there is a significant relationship between the use of information technology and the dimension of trust and security (guarantee) as one of the dimensions of the quality of services provided in telecommunications companies.

Through the results of the fifth sub-hypothesis test, it was found that there is a significant relationship between the use of information technology and the dimension of empathy with the customer as one of the dimensions of the quality of services provided in telecommunications companies. Through the results of the main hypothesis test, it was found that there is a significant relationship between the use of information

technology and improving the quality of services provided in telecommunications companies.

5.2 Research Limitations & Future Research

Research Limitations : This study has a few limitations. The small number of 40 employees makes it hard to apply the results to a larger group. Since the study only looks at data from one point in time, we can't say for sure if training causes better performance. Also, relying on employees' self-reports might not give the full picture, and focusing on just one organization means the results might not apply to others. Lastly, the study didn't consider some other important factors like job role or workplace environment.

Future Research : Future research should try to overcome these limitations. Studies that follow employees over time could give a better understanding of how training affects performance in the long run. It would also be useful to include more employees from different organizations and industries to see if the findings hold true elsewhere. Adding other factors like job satisfaction and using both surveys and interviews could provide more detailed insights. Finally, with the rise of online training, future studies could explore how digital learning compares to traditional methods.

5.3 Research Recommendations

Based on the results of the research, the researcher recommends the following:

1. Based on the results of the first sub-hypothesis test, the researcher recommends that the companies under study enhance interest in the dimension of tangible material aspects as one of the dimensions of service quality based on the use of information technology by using modern and appropriate technological equipment and devices by the companies under study, and increasing interest in equipment and buildings to have a beautiful and distinctive appearance, and paying more attention to the company's interior design providing a comfortable and enjoyable atmosphere for customers, and increasing companies' interest in providing the appropriate physical environment in terms of lighting, air conditioning, temperature, humidity, etc., which is reflected in the satisfaction of customers and employees in the companies.

2. Based on the results of the second sub-hypothesis test, the researcher recommends that the companies under study enhance their interest in the dimension of reliability or credibility as one of the dimensions of service quality based on the use of information technology by the company performing its services on time without any delay for the customer, and that the company is characterized by its ability to provide the service without interruption for any reason, and that the company is keen to solve the problems of customers regarding the services provided to them easily and smoothly, and that there is credibility in that the company is committed to providing all the services that it promised to customers, and that the company completes the performance of services correctly from the first time, which is reflected in the satisfaction of the company's customers.
3. Based on the results of the third sub-hypothesis test, the researcher recommends that the companies under study enhance their interest in the dimension of speed of response and customer assistance as one of the dimensions of service quality based on the use of information technology by having the company's employees fully prepared to provide assistance to customers, and that the company's employees work to help customers solve the problems they face in providing the service quickly and easily, and that the company's employees respond to the customers' needs no matter how busy they are, and increasing the company's management's interest in customer complaints and inquiries, and that the company's management work to shorten some procedures by employees in order to speed up customer service, and that employees provide service to customers according to their priority of entering the company and without transgression or favoritism, and that the company's management seeks to provide a sufficient number of employees who provide service to customers in order to quickly perform services to customers, which is reflected in achieving customer satisfaction with the company.
4. Based on the results of the fourth sub-hypothesis test, the researcher recommends that the companies under study enhance interest in the dimension of trust and security (guarantee) as one of the dimensions of service quality based on the use of information technology by focusing the company's management on the behavior of the company's employees making customers trust them, and making customers feel confident and secure when dealing with the company's employees, and that the behavior of the company's employees is characterized by transparency and clarity, and that the company's employees have the high

knowledge and experience to answer all customer inquiries, and the necessity for the company to take the confidentiality of the customer's information and maintain it using the latest technological means for that, and that the company's management ensure that all customer communications are completely confidential.

5. Based on the results of the fifth sub-hypothesis test, the researcher recommends that the companies under study enhance interest in the dimension of empathy with the customer as one of the dimensions of service quality based on the use of information technology by focusing the company's management on giving the customer personal attention, and that the company ensures that the company's working hours are appropriate To all the company's clients, and that the company's management ensures that the client's interest is its first concern and priority, and that the company understands the specific needs of clients, and that the company cares about clients' problems individually and works to address them, and that the company and its employees are committed to providing the best services to clients.
6. That the goal of achieving client satisfaction and then client loyalty is the optimal goal that it seeks to achieve by using the latest information technology methods in performing their work and achieving comprehensive quality in all the company's operations, departments and administrations.

5.4 Conclusion

This study explored the relationship between training and employee performance, focusing on how factors like the type of training, training duration, and employee characteristics such as age, education, and experience play a role. The findings suggest that training generally has a positive impact on employee performance, but this impact varies depending on the type of training and the specific demographics of the employees. For example, younger employees or those with less experience might benefit more from certain types of training compared to others.

Overall, the research highlights the importance of designing training programs that consider the unique needs and backgrounds of employees to maximize their effectiveness. While the study provided valuable insights, it also pointed out the need

for further research with larger samples and more diverse organizations to confirm these findings and explore additional factors that might influence the effectiveness of training.

References

- Al-Debei, A. I., Al-Lozi, E., & Papazafeiropoulou, A. (2013). "Why people keep coming back to Facebook: Explaining and predicting continuance participation from an extended theory of planned behaviour perspective." *Decision Support Systems*, 55(1), 43-54.
- Al-Mudimigh, A. S., & Ullah, Z. (2011). "Integration of business intelligence with corporate strategic management." *Information Systems Management*, 28(3), 257-268.
- Alshawi, S., Missi, F., & Irani, Z. (2011). "Organisational, technical and data quality factors in CRM adoption—SMEs perspective." *Industrial Marketing Management*, 40(3), 376-383.
- Ernst & Young. (2014). "Big data: Changing the way businesses compete and operate." *EYGM Limited*.
- Alotaibi, S. (2014). "Information security management in Saudi Arabian telecom companies." *International Journal of Computer Applications*, 97(11), 1-8.
- Al-Turki, U., Al-Homaidhi, S., & Al-Dossari, H. (2020). "The impact of 5G technology on the telecommunications industry in Saudi Arabia." *Journal of Information Technology Management*, 11(4), 65-78.
- Alshawi, S., Missi, F., & Irani, Z. (2011). "Organisational, technical and data quality factors in CRM adoption—SMEs perspective." *Industrial Marketing Management*, 40(3), 376-383.
- Al-Mudimigh, A. S., & Ullah, Z. (2011). "Integration of business intelligence with corporate strategic management." *Information Systems Management*, 28(3), 257-268.
- Ernst & Young. (2014). "Big data: Changing the way businesses compete and operate." *EYGM Limited*.
- Al-Turki, U., Al-Homaidhi, S., & Al-Dossari, H. (2020). "The impact of 5G technology on the telecommunications industry in Saudi Arabia." *Journal of Information Technology Management*, 11(4), 65-78.
- Alotaibi, S. (2014). "Information security management in Saudi Arabian telecom companies." *International Journal of Computer Applications*, 97(11), 1-8.

المراجع العربية

- تيناوي.أحمد (2019). " دور استخدام تكنولوجيا المعلومات في تحسين جودة الخدمات المقدمة في شركات الاتصالات "

Appendix

قائمة الاستبيان

السيد الكريم... السيدة الكريمة

تحية طيبة وبعد...

نضع بين أيديكم استبيان بعنوان دور استخدام تكنولوجيا المعلومات في تحسين جودة الخدمات المقدمة في شركة الاتصالات (STC)

وذلك من أجل إعداد مشروع تخرج في إدارة المشاريع في جامعة Midocean راجين التفضل بالاطلاع وبيان الرأي باختيار الإجابة المناسبة التي تعكس الواقع الفعلي من وجهة

نظركم.

مع الرجاء أخذ العلم أن استكمال الإجابة عن كافة عبارات الاستبيان والدقة في الإجابة ستعكس بالتأكيد على دقة النتائج التي سيتم التوصل لها، علماً بأن كافة المعلومات الواردة في الاستبيان ستعامل بسرية تامة، ولن تستخدم إلا لأغراض البحث العلمي.

وتقبلوا فائق الاحترام والتقدير..

الطالب: عامر أيوب

المشرف: د. منى

أولاً: العبارات التي تقيس استخدام تكنولوجيا المعلومات، والتي قام الباحث بتوزيعها على عينة الموظفين ضمن شركة الاتصالات (STC)

الرقم	السؤال	غير موافق بشدة (1)	غير موافق (2)	محايد (3)	موافق (4)	موافق بشدة (5)
	يعد مفهوم تكنولوجيا المعلومات مفهوماً واضحاً على مستوى شركتكم					
	هناك اقتناع وتأييد من الإدارة العليا في شركتكم لاستخدام تكنولوجيا المعلومات					
	يمتلك العاملون في شركتكم المهارات المطلوبة لاستخدام تكنولوجيا المعلومات بشكل جيد					
	يتقبل العاملون في شركتكم فكرة استخدام تكنولوجيا المعلومات					
	تمتلك شركتكم بنية تحتية مهيأة لاستخدام تكنولوجيا المعلومات بشكل جيد					
	تستخدم شركتكم تكنولوجيا المعلومات في إنجاز أعمالها المختلفة					
	تعمل شركتكم على تطوير الإمكانيات في مجال تكنولوجيا المعلومات بهدف تحسين الأداء.					
	تعمل شركتكم على سرعة نقل المعلومات بين الأقسام المختلفة والإدارة العامة اعتماداً على تكنولوجيا المعلومات					
	تحرص إدارة شركتكم على تدريب الموظفين على كيفية استخدام تكنولوجيا المعلومات وكل جديد فيها					
	تستخدم شركتكم تكنولوجيا المعلومات بصورة متطورة ومواكبة لكل ما هو جديد					
	يوجد في شركتكم موقع إلكتروني يسهل الوصول إليه ومعروف من قبل العملاء					

ثانياً: العبارات التي تقيس أبعاد جودة الخدمة الخمسة، والتي قام الباحث بتوزيعها على عينة عملاء شركة الاتصالات

الرقم	السؤال	غير موافق بشدة (1)	غير موافق (2)	محايد (3)	موافق (4)	موافق بشدة (5)
	مظهر موظفي الشركة لائق					
	هناك اقتناع وتأييد من الإدارة العليا					
	تستخدم الشركة معدات وأجهزة تكنولوجية حديثة ومناسبة.					
	التجهيزات والمباني ذات مظهر جميل ومميز					
	التصميم الداخلي للشركة يوفر جواً مريحاً للعملاء					
	صالات الانتظار في الشركة مريحة.					
	مواقع الشركة المختلفة مناسبة للعملاء ويمكن الوصول إليه بسهولة.					
	تهتم الشركة بالنظافة والإضاءة والتكييف وتوفير بيئة مادية مناسبة.					

العبارات التي تقيس بُعد الاعتمادية او المصداقية

الرقم	السؤال	غير موافق بشدة (1)	غير موافق (2)	محايد (3)	موافق (4)	موافق بشدة (5)
	تقوم الشركة بتقديم خدمات خالية من الأخطاء					
	تؤدي الشركة خدماتها في الوقت المحدد دون تأخير					
	تتسم الشركة بقدرتها على تقديم الخدمة دون انقطاع					
	تحرص الشركة على حل المشكلات للعملاء حول الخدمات المقدمة لهم بسهولة ويسر.					
	تلتزم الشركة بتقديم الخدمات التي وعدت بها.					
	تنجز الشركة الخدمات بطريقة صحيحة من المرة الأولى					

العبارات التي تقيس ب العمل بُعد سرعة الاستجابة ومساعدة العميل

الرقم	السؤال	غير موافق بشدة (1)	غير موافق (2)	محايد (3)	موافق (4)	موافق بشدة (5)
	موظفو الشركة على استعداد تام لتقديم المساعدة لك					
	يسعى موظفو الشركة لمساعدتك حل المشكلات التي تواجهك في تقديم الخدمة					
	يستجيب موظفو الشركة لاحتياجات العملاء مهما كانت درجة انشغالهم.					
	تهتم إدارة الشركة بشكاوى واستفسارات العملاء.					
	يتم اختصار بعض الإجراءات من قبل العاملين بهدف سرعة خدمة العملاء					
	يقدم الموظفون الخدمة للعملاء حسب أولوية دخولهم الشركة وبدون تجاوز					
	يتوفر في الشركة لوحات إرشادية عند تقديم الخدمات بهدف تسريع الخدمة.					
	يتوفر عدد كافي من الموظفين الذين يقدمون الخدمة للعملاء.					

العبارات التي تقيس بعد الثقة والأمان (الضمان)

الرقم	السؤال	غير موافق بشدة (1)	غير موافق (2)	محايد (3)	موافق (4)	موافق بشدة (5)
	سلوك العاملين في الشركة تجعلك تثق بهم.					
	شعورك بالأمان عند تعاملك مع العاملين في الشركة					
	سلوك العاملين في الشركة يتسم بالشفافية والوضوح					
	العاملون في الشركة لديهم المعرفة والخبرة العالية للإجابة على جميع استفساراتك					
	تولي الشركة سرية بالمعلومات الخاصة بالعمل					
	تشعر بحرص الشركة على أن تكون الاتصالات الخاصة بالعملاء سرية.					

العبارات التي تقيس بُعد التعاطف مع العميل

الرقم	السؤال	غير موافق بشدة (1)	غير موافق (2)	محايد (3)	موافق (4)	موافق بشدة (5)
	الشركة تعطي العميل اهتماماً شخصياً					
	ساعات العمل لدى الشركة مناسبة لجميع العملاء					
	الشركة لها مصلحة العميل من أولى اهتماماتها ولها الأولوية					
	تتفهم الشركة الاحتياجات المحددة للعملاء					
	تهتم الشركة بمشكلات العملاء بشكل فردي.					
	تلتزم الشركة والعاملون فيها بتقديم أفضل الخدمات للعملاء					

forms.gle/Qv398e5qHnxDnmc87