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Recommendations for Improving the Service Quality of Mobile Telecommunications

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Abstract. *This paper is an investigation of how to improve service quality of mobile telecommunications companies by using a modified SERVQUAL model. This study is based on five major service dimensions, reliability, tangibles, empathy, assurance, and responsiveness for establishing the relationship with customer satisfaction. in the competitive world of telecommunications. Structured questionnare was used to collect data from 205 customers who evaluated Vodafone, Orange, Telekom, and RCS&RDS for service quality. The study applies statistics, ANOVA, factor analysis, correlation and gap analysis with the help of R software. The results show notable variations in service quality, including shortcomings in responsiveness and dependability. Factor analysis provides deeper insights into expectations and service delivery by highlighting underlying constructs that influence customer perceptions. The findings highlight the necessity of targeted staff training initiatives, individualised customer service, and continuous network improvements. This study offers telecom providers strategic recommendations to close service gaps, improve customer retention, and strengthen their market position by utilising data-driven insights.*

Keywords: network optimisation, telecommunication, customer satisfaction, quality of service.

Introduction

Our modern society depends much on the telecoms sector since it allows flawless communication and digital connectivity in many different fields. Good service quality is essential as expectations grow and technology evolves.

The SERVQUAL model evaluates service quality by comparing customer expectations and perceptions in five areas.

This study aims to address the following research question in light of these difficulties: What are the main service quality gaps in the Romanian mobile telecommunications industry, and how may focused enhancements raise customer satisfaction?

With the goal of identifying important areas for development and suggesting focused solutions, this study assesses how Vodafone, Orange, Telekom, and RCS&RDS are perceived in terms of service quality. This study uses statistical analysis to pinpoint service shortcomings and offer focused fixes to improve the client experience. By filling in the gaps in service quality, this study not only adds to the body of knowledge but also gives industry participants useful tactics for enhancing client retention and happiness over the long run.

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Literature review

By facilitating the transmission of information via wired and wireless technologies over great distances, telecommunications networks are essential to modern society (ITU, 2020). These networks are made up of interconnected systems that facilitate the transmission of multimedia, data, and speech.

Access networks (such as cellular towers and Wi-Fi hotspots), user devices (such as smartphones, PCs, and Internet of Things devices), and core networks, which are in charge of effectively routing data through data centres and servers, are among the essential elements (Valdar, 2017).

Telecommunication services are broadly categorized into voice communication, internet services, multimedia transmission, and specialized offerings such as cloud computing and Internet of Things (IoT) solutions (Bordoloi et al., 2023). The introduction of 5G technology, which improves connectivity speeds, lowers latency, and allows cutting-edge applications like smart cities and driverless cars, has drastically changed the market (Shafi, 2017).

Customer satisfaction, loyalty, and competitive positioning in the telecommunications industry are all influenced by service quality. The SERVQUAL model, which was first presented by Parasuraman et al. (1988), is one of the most popular frameworks for evaluating service quality. It finds discrepancies between customer expectations and perceived service performance across five factors.

The physical components of service delivery, such as network infrastructure, device quality, and retail store environments, are referred to as the tangible dimension. A well-stocked store with competent employees and up-to-date technology can improve the shopping experience for customers. Another important consideration is reliability, which gauges a provider's capacity to provide steady, uninterrupted service. Slow internet speeds or frequent service interruptions tend to erode client confidence. How well a business responds to consumer questions and fixes problems is measured by responsiveness. Telecom companies are seen as being very attentive when they promptly address technical issues through online chat or customer service lines..

Beyond these factors, assurance is crucial to gaining the trust of customers, especially when it comes to data security and the provider's general level of experience. Consumers anticipate that telecom providers would safeguard their private data against fraud and security lapses. Finally, empathy shows how well a service provider understands the wants of their clients and tailors their offerings. Customer loyalty is increased when a business shows a high degree of empathy by providing customised data plans based on usage habits.

Numerous businesses, including healthcare, hospitality, and telecommunications, have adopted this concept (Almomani, 2018). According to a study on UK mobile telecom operators by Almomani (2018), the most important elements affecting consumer satisfaction were responsiveness and network dependability. Although providers did well in terms of physical infrastructure, the user experience was generally harmed by poor customer service response times and inconsistent networks.

Telecom companies still struggle to maintain service quality in spite of technical developments. Network congestion is a recurring problem that causes reduced data rates and service outages, especially during periods of high usage. Furthermore, network growth is hampered by antiquated infrastructure in some areas, which impacts coverage and performance. Another key issue is cybersecurity, which necessitates constant investment in security measures by businesses due to the substantial dangers posed by data breaches and unauthorised access to client information (Oladapo et al., 2018).

Beyond technical difficulties, customers continue to express frustration with billing transparency. Unexpected charges, ambiguous pricing structures, and trouble comprehending their invoices are among the problems that many users describe. Businesses must enhance their communication tactics and implement more open pricing structures in order to allay these worries. Researchers propose a number of tactical ways to address these issues. Predictive analytics is one strategy that reduces service interruptions by anticipating and preventing network failures before they happen (Oladapo et al., 2018). By identifying system irregularities and carrying out preventive maintenance, AI-driven automation is another powerful tactic that can improve network stability. Additionally, by tailoring their service plans to each customer's unique consumption patterns, businesses can increase customer satisfaction (Bordoloi et al., 2023).

According to Nicolescu et al. (2017), a study conducted on Romanian telecom providers, enhancing customer service quality requires responsiveness and empathy. According to their research, effective customer care and tailored service offers greatly increase customer happiness and retention.

New technologies are being used by telecom operators more frequently in an effort to increase network efficiency and dependability. Addressing coverage gaps in remote locations through the use of satellite technology is one of the most promising advances. Vodafone successfully made the first satellite-enabled video call in mid-Wales in January 2025 using a regular 4G/5G smartphone in an area that had not yet been linked. Reached in collaboration with AST SpaceMobile, this milestone enables customers to smoothly transition between space-based and terrestrial networks without the need for further equipment (Vodafone, 2025).

At the same time, AI-driven service optimization is transforming network management. In 2024, Panahi et al. created an AI-powered model based on ITU-T P.1203 that has a 95.8% accuracy rate in predicting customer happiness. As a result, telecom companies can improve service performance and allocate resources more effectively (Panahi et al., 2024). Emerging technologies including edge computing, VoWiFi, and 6G networks are anticipated to significantly transform service delivery in addition to AI, providing quicker and more dependable connections (Zhang 2021).

Telecom companies track a variety of key performance indicators (KPIs) that evaluate customer satisfaction, network reliability, and operational effectiveness in order to continuously enhance service quality.

Network downtime reduction, which measures fewer service interruptions and hence improves reliability, is one of the most significant KPIs. While internet speed assesses data transfer rates, service uptime guarantees network availability. Call drop rate indicates the proportion of unsuccessful calls brought on by network problems, whereas latency gauges reaction time, which is crucial for real-time services.

The first-call resolution rate, which shows how well problems are handled during the initial contact and ease the burden on support teams, is a measure of customer service efficiency.

Response time measures how rapidly customer care agents or AI chatbots respond to questions, while resolution time monitors the typical amount of time required to address customer complaints.

Customer retention rate, which calculates the proportion of customers who renew contracts or continue service, is a key indicator of customer satisfaction and retention. While the upselling success rate assesses how well customised service plans increase client engagement and income, the billing dispute rate monitors complaints about ambiguous charges. Telecom companies can apply data-driven enhancements to improve service quality, customer satisfaction, and overall

market competitiveness by combining objective network performance measurements with customer perceptions.

Data collection

In this paper, an adapted SERVQUAL model is used to measure the service quality of four major MOBILE network operators: Vodafone, Orange, Telekom, and RCS&RDS. The goal is to compare perceived service quality, identify unsatisfactory areas, and recommend improvements. The research explores how each dimension impacts overall satisfaction. The results include concrete recommendations that are of interest for the whole telecommunications industry for quality of service improvement and harmonization to customer expectations.

Amendments were made in the questionnaire to suit sector specific concerns such as name and network stability, transparency in billing, response to technical issues, and personalization of services. This adaptation allows us to extend authors' methodology to the specific context of mobile telecoms services without changing its core fundamentals. The modified model maintains five attributes, but the items have been reworded to account for industry specific issues, for example those related to network reliability, billing transparency and responsiveness to technical questions. An online survey was developed, which comprised 20 items based on SERVQUAL and was rated by a 5-point Likert scale. Respondents were asked their expectations as well as to rate their experience, and gap analysis could be conducted to show the gap between what people expect and what they think they get. Collection occurred within one month and resulted in 205 valid responses from experienced subscribers of one or more of four telco companies.

Methodology

The present research is guided by the following hypotheses:

1. H1: Feelings of customer service quality in mobile telecommunications are higher above customer satisfaction.
2. H2: Accountability and dependability are the two most significant constructs with regard to the satisfaction of customers.
3. H3: When comparing its competitors to Vodafone, the company shows the least differences in service quality across all five SERVQUAL criteria.
4. H4: Using customer service solutions driven by AI can improve responsiveness and close service gaps.

To examine these hypotheses, a set of different statistical methods were performed with R-software for data handling and analysis.

Descriptive statistics were used to summarize customer perceptions across the five SERVQUAL indicators. Mean and median values were computed for each provider to assess the central tendency of responses.

Each of the dimensions was examined independently to determine differences between protection, responsiveness, assurance, empathy, and tangibles. If significant differences were found, providers with the most significant differences were isolated by using Tukey's HSD post hoc test, and H1 was supported. Discrepancies between desired and estimated service expectations were evaluated using gap analysis.

The gap analysis was carried out to compare the differences between what the customer expects from the service provider and what is really perceived on each SERVQUAL dimension.

$$Gap\ Score = Perception\ Score - Expectation$$

Negative gaps represent deficiencies of service, revealing aspects in which customers' service expectations are not being met. This procedure was useful to confirm H1 and also to verify if Vodafone presented the minor service quality differences (H3). The suitability of the SERVQUAL model for measuring customer perceptions in telecommunications was assessed by factor analysis. This approach located the underlying constructs that influence variance in the service quality ratings and also verified that the five service attributes are unique and measurable factors. The factor solution supported that these five indicators together explain 88% of the total variance, thus providing evidence for the validity of the adapted framework.

A correlation analysis was performed to explore relationships between dimensions and overall customer satisfaction. Pearson correlation coefficients were calculated in order to investigate this. Pearson's correlation measured linear relationships between attributes. Visualizations were further made with heatmaps, in which a bigger color means a stronger correlation. Results showed that reliability and responsiveness had the highest significant positive correlations with customer satisfaction ($r > 0.7$, $p < 0.01$). On the other hand, 'tangibles' and 'assurance' have weaker relationships with overall satisfaction, indicating that their effects on overall satisfaction are more restricted. This examination supported H2, which tested whether responsiveness and reliability had the greatest correlation with customer satisfaction.

In order to gain a better understanding of the data, the boxplot for all provider levels was used to show the liprovidational variation of the service quality perception, but also provided median and interquartile ranges. Heatmaps were drawn to illustrate the strengths of the correlations, enabling key service attributes determining satisfaction of customers to be identified. Although this research is based on customer's attitudes, as reported by the questionnaire, a proper evaluation of the quality of service in telecommunications is one in which subjective opinions are combined with objective performance parameters of the network. Actual network speed, latency, service uptime, and mean time to resolve are metrics that are quantifiable from the perspective of service efficiency. Whilst these measures were not available to us in this analysis, future work will need to consider that the economic aspects of this analysis could be tested with real-world performance information plus customer perceptions to test the robustness of the analyses.

To protect participant anonymity and data integrity, this study complied with stringent ethical standards. In order to protect personal information, all responses were gathered anonymously, and respondents gave their informed consent prior to participation. Fairness, accuracy, and objectivity were guaranteed by adhering to ethical research norms during the data collecting and processing process.

Tangibles measures the physical facilities, the appearance of service personnel and equipment in the service delivery. A1 and A2 represent the customer's ideal situation and P1 and P2 stand for performance expectations.

Reliability measures the stability and consistency of service as network consistency and continuousness; and dependability. A3 and A4: customer's expectation terms of reliability; P3 and P4: perceived performance.

Responsiveness refers to the performance of customer support in handling concerns and complaints. Standards B1 and B2 address customer expectations of response times and technical support with P5 and P6 capturing the actual service received.

Assurance probes customer's trust in the technical expertise and data security of the staff of the provider. B3 and B4 measure anticipated service delivery and staff competence and P7 and P8 are customers' perceptions of these dimensions.

Empathy evaluates the provider's ability to offer personalized service and understand customer needs. C1 and C2 measure expectations related to personalized interactions and respectful service, while P9 and P10 assess the extent to which these expectations are met.

In this framework, expectancy factors (A, B, C) specify what consumers expect service providers could offer while perception elements (P) represent the actual observations. This model allows a clear and systematic comparison between expected and provided service quality by four sampled companies, providing significant value to the identification of major service gaps and the potentiality to propose targeted improvements.

Results and discussions

The results of the adapted SERVQUAL analysis provide valuable insights into the perceived The adapted SERVQUAL analysis results have a major contribution in the quality of perception regarding the Vodafone, Orange, Telekom and the RCS&RDS services. Statistical methods, such as descriptive, ANOVA, factor analysis, gap analysis and correlation, helped to identify substantial variations in customer perception and expectation towards the evaluation criteria. The tangible, reliability, responsiveness, assurance and empathy dimension analysis reveals that they have different pros and cons of service quality for their own characteristics. Factor analysis showed these service attributes collectively account for 88% of the total variance in customer perceptions, evidencing the importance of these service attributes for the measurement of telecom service quality. To find out if there are significant differences between companies across all assessment categories, the analysis uses descriptive statistics and then an ANOVA test. Boxplots and other graphic representations were created to show how scores varied.

Descriptive statistics provide a comparative view of service quality among providers by summarising client impressions of tangibles, responsiveness, assurance, empathy, and reliability. Vodafone is the most trustworthy service, as evidenced by its highest mean reliability (4.00) and responsiveness (3.89) rankings. RCS&RDS, on the other hand, has the lowest mean scores, especially in responsiveness (3.75), which indicates significant shortcomings in the effectiveness of their customer service.

Vodafone outperforms rivals in responsiveness and dependability, showing customer trust in its stable, effective network.

Particularly in reliability, where their lower mean scores reflect perceived service irregularities, Orange and RCS & RDS perform worse. The fact that all suppliers' minimal reliability and responsiveness scores are 1.00 indicates that a portion of clients have serious service problems, highlighting the necessity.

Table 1. Descriptive statistics

Statistic	Tangibles (A1-A4)	Reliability (B1-B4)	Responsiveness (P1-P4)	Assurance (P5-P8)	Empathy (P9-P10)
Min	1.00	1.00	1.00	1.00	1.00
Median	4.00	4.00	4.00	4.00	4.00
Mean	4.15	4.00	3.89	3.85	3.75
Max	5.00	5.00	5.00	5.00	5.00

Source: Authors' own research.

The boxplot below illustrates the variability and distribution of SERVQUAL dimension scores across the four companies, highlighting significant differences. It provided a visual

representation of these differences, showing that Vodafone consistently received higher median scores across all dimensions, while RCS&RDS had greater variability and lower median scores.

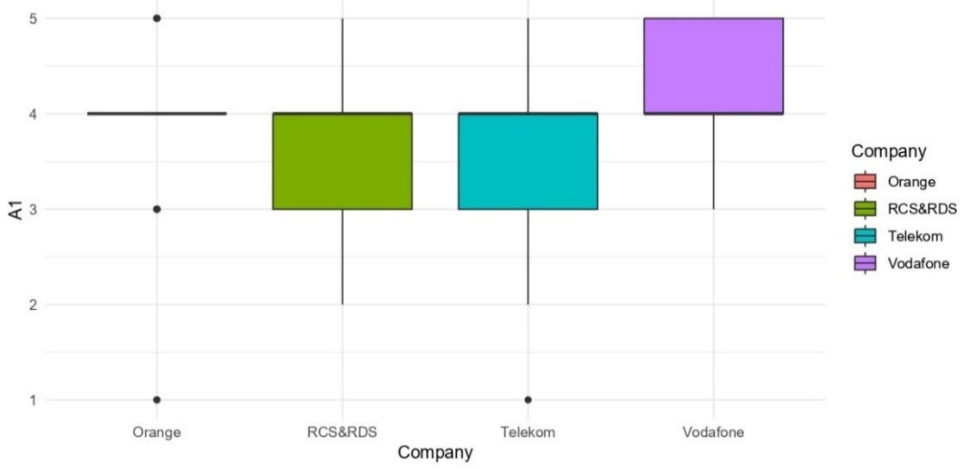

Figure 1. Boxplot analysis

Source: Authors' own research.

The GAP analysis results reveal discrepancies between customer expectations and actual service perceptions across the five SERVQUAL factors for each telecom provider.

Service quality gaps for Vodafone are less than its competitors on the market; therefore positioning the company in a clear leadership position. Greatest deficiencies are in tangibles (0.070) and reliability (0.026), indicating physical infrastructure and reliability need attention. Empathy (0.035) is the only factor that is positive and this indicates that Vodafone customers feel that their needs are well understood.

Orange has above-average "gap" in responsiveness (-0.104) and assurance (-0.125) – which means longer waiting times and little faith in employee competence. Tangibles (-0.052) and reliability (-0.052) also reverberate with moderate distances which refer to customer dissatisfaction in infrastructure and consistence of service.

Telekom's balance is quite moderate but most of the scores are still negative, and the biggest differences are for responsiveness (-0.058) and tangibles (-0.077). This reveals that customers meaning Telekom supports are quite efficient at serving the client based on their individual needs.

RCS&RDS has a positive score of tangibles (0.022), that reflects client satisfaction with infrastructure. However, notable negative gaps can be seen in terms of reliability (-0.111) and responsiveness (-0.089), indicating that although customers recognise the physical experience of the service, network reliability and responsiveness are still key areas of weakness. The results reveal that responsiveness and reliability gaps are the highest for all carriers, especially Orange and RCS&RDS. On the other hand, empathy scores are around 0 or a bit positive, indicating that personal service plays some significant role in the industry. The insights have potential strategic implications via customer service efficiency and network reliability.

Table 2. GAP Results

Company	Tangibles	Reliability	Responsiveness	Assurance	Empathy
Vodafone	-0.07	-0.026	-0.009	-0.018	0.035
Orange	-0.052	-0.052	-0.104	-0.125	0.031
Telekom	-0.077	-0.038	-0.058	-0.019	-0.010
RCS&RDS	0.022	-0.111	-0.089	0.011	-0.22

Source: Authors' own research.

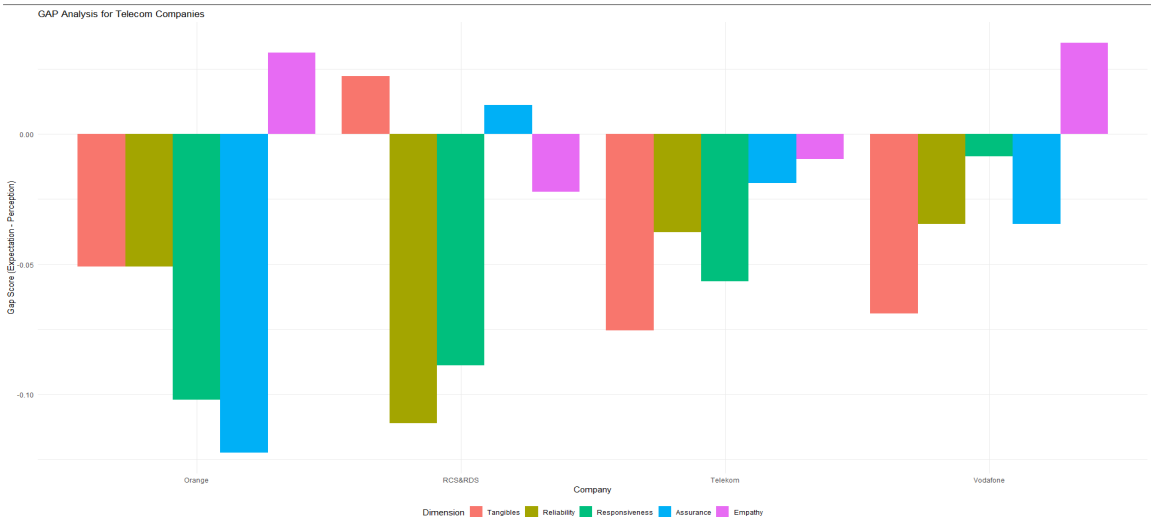

Figure 2. Gap analysis

Source: Authors' own research.

The ANOVA test assesses whether there are statistically significant differences in the service quality perceptions among different telecom providers. Table 3 presents the results, showing significant differences between the companies.

Table 3. ANOVA Results

Source	Df	Sum Sq	Mean Sq	F value	Pr(>F)
Company	3	15.81	5.269	10.74	1.41e-06
Residuals	201	98.61	0.491		

Source: Authors' own research.

The ANOVA results presented in Table 3 confirm that statistically significant differences exist between telecom providers regarding service quality ($F = 10.74$, $p < 0.001$). The small p-value suggests that the differences observed in score of service qualities are unlikely to be caused by pure chance, and the differences are also substantively meaningful. From a practical perspective, company factor explains a large proportion of the total variance of the scores, which indicates the significance of the context-specific to the provider on the customers' evaluations of service quality. Nevertheless, the residual variance (SS = 98.61) is still high enough to imply that the variation in perceived service quality is affected by other causes, such as network coverage, the individual service experiences and the differences among customer expectations.

These results indicate that although telecommunication companies influence customer perceptions, individual service encounters and external market influences are equally important. To investigate these differences further, Tukey's HSD analysis was performed (Table 4). The comparison analyses proved that the performance of Vodafone is highly dominant over RCS&RDS

and Telekom($p < 0.001$) in establishing reliable, responsive, and successful connections also revealing its strong market positioning and network performance. The findings also confirm that Vodafone's superiority is significant, it is having a competitive edge on the important facets of the service.

In contrast, there are no significant differences between Orange and Telekom ($p > 0.05$) meaning that at least the quality of their services offered is perceived to be roughly equivalent by the customers. The relative similarity of these two providers might lead to retention problems, since neither has an edge over the other one. This state of affairs indicates that user choices may be made not in terms of quality of service, but in terms of price and promotions.

Table 4. Tukey's HSD Test

Comparison	Difference	Lower	Upper	p-value
RCS&RDS-Orange	-0.21	-0.59	0.16	0.457
Telekom-Orange	-0.20	-0.56	0.16	0.490
Vodafone-Orange	0.45	0.10	0.81	0.005
Telekom-RCS&RDS	0.02	-0.35	0.38	0.999
Vodafone-RCS&RDS	0.67	0.31	1.03	0.00002
Vodafone-Telekom	0.65	0.31	0.99	0.00001

Source: Authors' own research.

Tukey's HSD test revealed significant differences between Vodafone and its competitors, confirming Vodafone's superior service quality ratings.

Reliability (MR2) reflects service consistency and dependability, where both Vodafone and RCS&RDS performed well due to stable network performance and minimal disruptions.

Responsiveness (MR4) measures how quickly and effectively customer service is handled, where Orange's superior responsiveness reflects its commitment to resolve issues as quickly as possible.

Assurance (MR1) relates to staff competency and trust, in which Telekom performed well by creating good client trust through competent guidance. customized products customers responded well. Finally, tangibles (MR5), which refers to physical pavilion and service delivery also favoured RCS&RDS due to its more up-to-date infrastructure and service presentation, positioned RCS&RDS favorably due to its modern facilities.

Table 5. Factor loadings analysis

Variable	MR2	MR4	MR5	MR1	MR3	Communality (h2)	Uniqueness (u2)
A1	0.21	0.26	0.77	0.40	0.21	0.90	0.103
P1	0.17	0.43	0.75	0.18	0.28	0.88	0.118
A2	0.20	0.26	0.69	0.48	0.22	0.87	0.128
P2	0.14	0.52	0.67	0.24	0.29	0.88	0.123
A3	0.13	0.31	0.39	0.60	0.21	0.67	0.327
P3	0.22	0.74	0.39	0.33	0.22	0.91	0.086
A4	0.26	0.43	0.38	0.68	0.28	0.94	0.063
P4	0.28	0.73	0.37	0.26	0.22	0.86	0.138
B1	0.26	0.42	0.31	0.67	0.36	0.91	0.086
P5	0.25	0.73	0.29	0.35	0.30	0.89	0.109
B2	0.31	0.41	0.34	0.66	0.32	0.92	0.075
P6	0.26	0.73	0.27	0.37	0.31	0.91	0.089
B3	0.36	0.17	0.23	0.38	0.71	0.86	0.141
P7	0.29	0.47	0.28	0.16	0.72	0.92	0.080

Variable	MR2	MR4	MR5	MR1	MR3	Communality (h2)	Uniqueness (u2)
B4	0.35	0.28	0.30	0.39	0.64	0.86	0.137
P8	0.28	0.48	0.36	0.24	0.61	0.87	0.133
C1	0.85	0.10	0.09	0.19	0.22	0.82	0.184
P9	0.92	0.19	0.12	0.10	0.12	0.92	0.081
C2	0.88	0.15	0.15	0.18	0.21	0.90	0.098
P10	0.83	0.28	0.19	0.11	0.17	0.84	0.162

Source: Authors' own research.

Table 6. Factor statistics

Factor	SS Loadings	Proportion Variance	Cumulative Variance
MR2	4.08	0.20	0.20
MR4	4.06	0.20	0.41
MR5	3.47	0.17	0.58
MR1	3.09	0.15	0.73
MR3	2.84	0.14	0.88

Source: Authors' own research.

Additionally, the correlation analysis was conducted to examine the relationships between the primary components: tangibles, reliability, responsiveness, assurance, and empathy for each of the four companies: Vodafone, Orange, Telekom, and RCS&RDS.

The generated heatmaps give important insights into the elements affecting consumer impressions by showing the direction and strength of these correlations.

Orange's analysis shows a strong positive relationship between customer happiness and responsiveness, indicating that customers place a high value on prompt and efficient assistance. According to this research, it's critical to continue providing effective customer service in order to keep favourable opinions.

Reliability and assurance show a strong positive association with regard to Telekom, suggesting that customer happiness is greatly influenced by dependable services provided by informed employees. This implies that additional gains could be made by funding employee training and consistent service.

Most components in the RCS&RDS heatmap have moderate correlations, with tangibles displaying the strongest links with other elements. This outcome highlights the significance of RCS&RDS clients' physical infrastructure and service presentation.

Tangibles have the strongest links with other factors, according to the RCS&RDS heatmap, which shows moderate correlations across most components. The significance of physical infrastructure and service presentation for RCS&RDS clients is highlighted by this outcome. High relationships between empathy and dependability are found in Vodafone's investigation, indicating that customer views are greatly improved by individualised, client-focused services coupled with reliable network performance.

For every telecom provider, the correlation heatmaps are shown in the following figures:

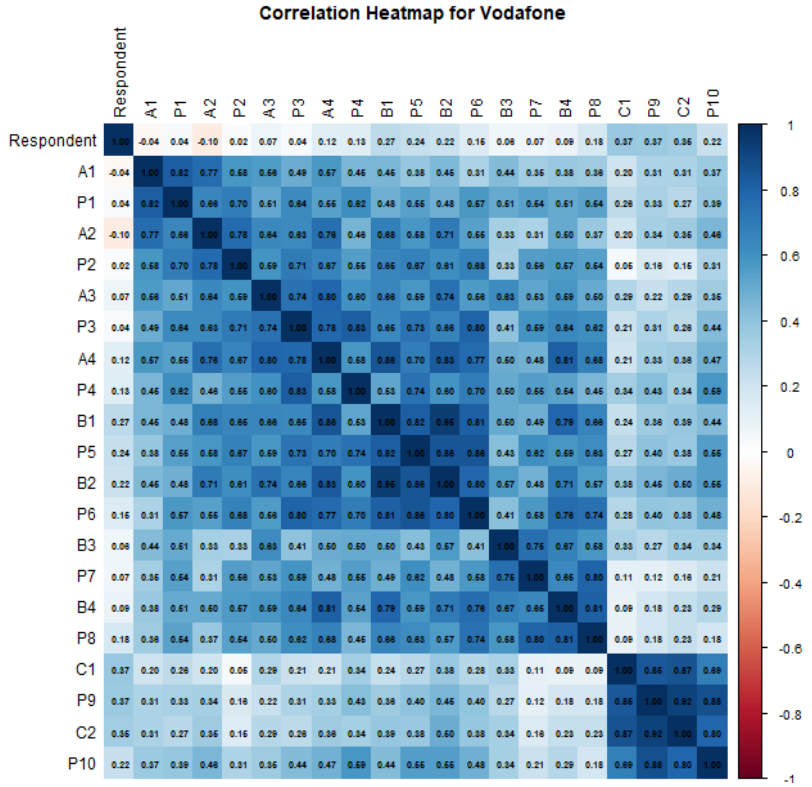

Figure 3. Correlation Heatmap Vodafone

Source: Authors' own research.

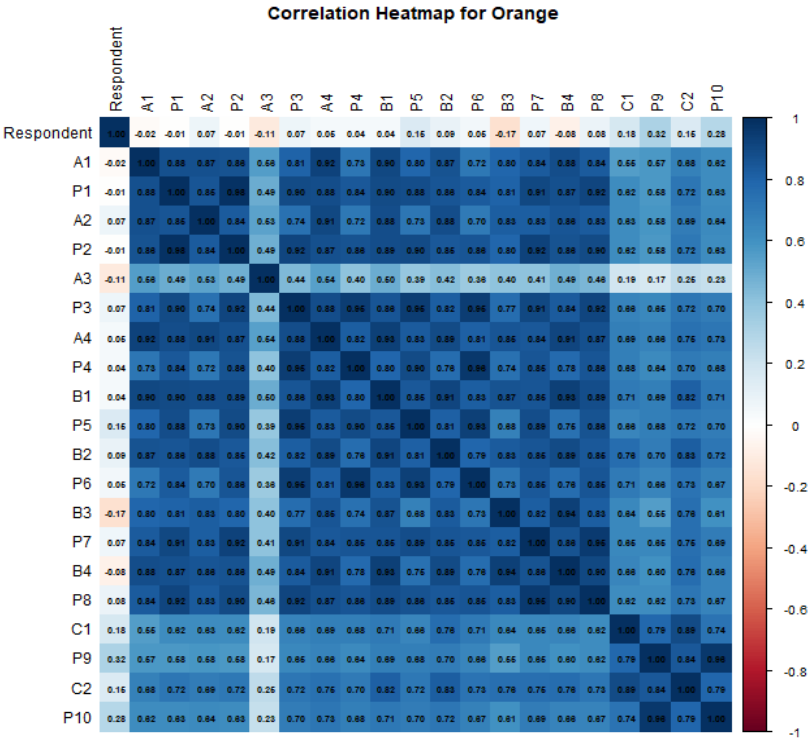

Figure 4. Correlation Heatmap Orange

Source: Authors' own research.

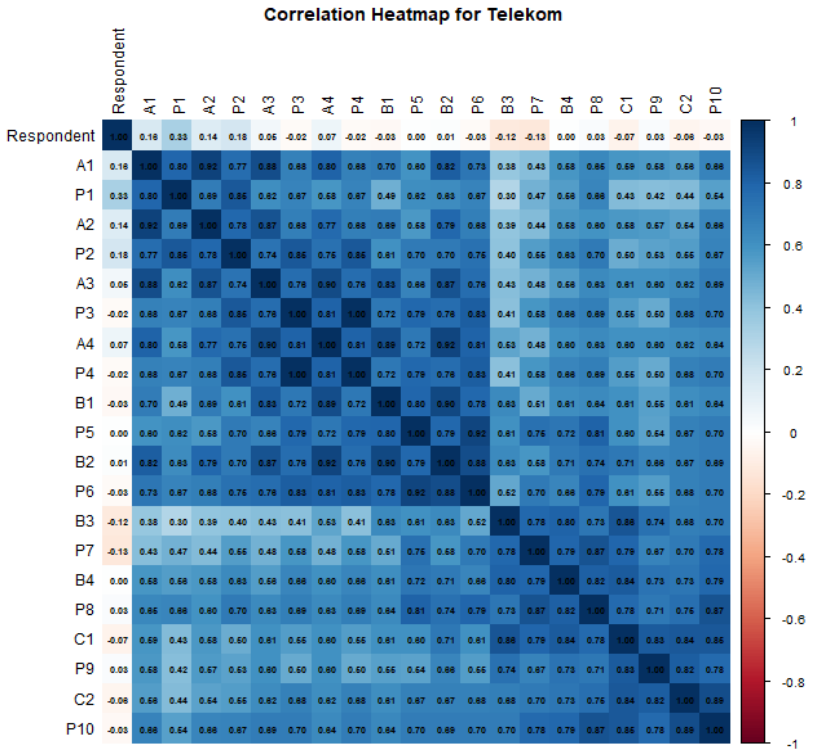

Figure 5. Correlation Heatmap Telekom

Source: Authors' own research.

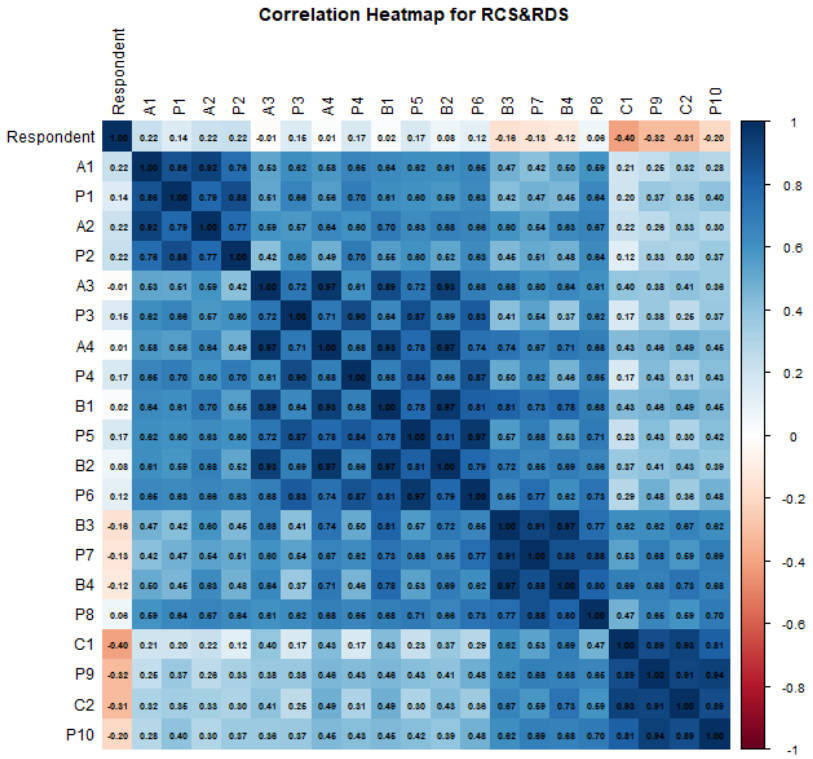

Figure 6. Correlation Heatmap RCS&RDS

Source: Authors' own research.

The findings suggest that improving responsiveness and empathy should be a strategic focus for RCS&RDS and Telekom, while Vodafone and Orange should maintain their high standards in reliability and responsiveness. To ensure realistic and measurable improvements in service quality, the following solutions are proposed, each with corresponding key performance indicators and operational impact:

Table 7. Recommendations

Solution	Key Performance Indicator (KPI)	Implementation impact
Network infrastructure enhancement	Reduction in network downtime, increase in Mbps speed, improved latency	High capital investment, potential increase in operational costs
AI-Powered customer support	Average response time, issues resolved via AI	Reduction in customer service workforce, cost savings in the long term
Billing transparency	Customer satisfaction with billing, reduction in disputes	Minor system updates, moderate implementation cost
Staff training programs	First-call resolution rate, customer satisfaction improvement	Increased training costs, potential need for additional personnel
Personalized customer services	Retention rate improvement, upselling success rate	Data-driven marketing, potential increase in CRM investment
Network performance optimization	Service uptime, call drop rate, resolution time	Investment in monitoring tools, automation of troubleshooting

Source: Authors' own research

Conclusion

This study investigates the effect of component of SERVQUAL such as reliability, responsiveness, assurance, empathy, and tangibility on perceived service quality and customer satisfaction within the mobile telecommunications industry. Through a revised SERVQUAL analysis and statistical techniques this study found that these five dimensions are critical in deciding satisfaction with customers. Vodafone leads in empathy and dependability, while Orange excels in reactivity, according to this comparison of Vodafone, Orange, Telekom, and RCS&RDS.

The findings are consistent with study hypotheses. H1 is supported as results indicate significant differences between customer expectations and perceived service quality in all five SERVQUAL dimensions. Of these, the greatest disparities exist in responsiveness and reliability and immediate action is warranted. The second hypothesis (H2) is also supported, indicating that reliability and responsiveness have the most significant effect on customer satisfaction. These characteristics have a great correlation with the general service quality, indicating that their improvements can largely contribute to better customer experiences and retention. Thirdly, hypothesis H3 is confirmed by the results of the gap analysis, which indicate that Vodafone has the least service quality gaps, thus confirming its competitive advantage in the telecom industry. Fourth, the study confirms the fourth hypothesis (H4) that AI-based customer services are addressed to enhance service response and reduce service wastages. In addition to validating these hypotheses, the implication of this study for the industry are also provided. Continued disparities in reliability and response times point to the need for investment in strategic communications equipment and for efficient customer service processes. The strong results of Vodafone are a

testimony that a better service, improved customer experience can ensure customer satisfaction and brand loyalty. If there's a service gap to bridge for Orange, Telekom or RCS&RDS, it will be through focused initiatives, perhaps better response times for customer service, and greater stability for the network. The research also highlights how technology, including AI-powered automation, is helping to improve service delivery. This study has implications, but also limitations. However, some degree of generalization of the study is likely to be constrained by the sample size of 205 participants. Using a sample consisting of a wider range of ages is necessary to enhance the generalizability of the findings. he study relies on self-reported perceptions, which may involve response biases.

As the telecom industry develops further, incorporating data-driven strategies will be crucial to improving service quality, cultivating client loyalty, and guaranteeing sustained competitiveness.

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