AN EXPLORATORY INVESTIGATION OF CUSTOMER SATISFACTION IN MOBILE COMMUNICATIONS: EVIDENCE FROM ROMANIA

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Abstract
Due to the technological evolution, telecom companies play a critical role of the entire economy with the importance of the provided services, that are inseparable of the daily activities in a business scope but in the same time for the daily life of the population. Being a dynamic and a competitive market, the customer satisfaction for the service provide is crucial for every telecom provider because the investment and continuously understanding the customer feelings and experiences because only in this way every telecom operator can deliver to their customers the expected services. This study will complete the literature that are focused on the customer satisfaction on mobile communications through the applied research model, the presentation of the theoretical concepts as customer satisfaction, mobile technologies including 5G, quality of service in telecommunication, network quality, information security, customer support and information quality. The research method was chosen a quantitative one as a questionnaire, there were formulated six hypotheses based on the dimensions chosen and were validated using one of the statistical tools as SPSS.
Keywords: Customer satisfaction, Mobile communication, Telecommunication, Quality of service.
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1. INTRODUCTION

The ability to build and maintain strong relationships with customers is essential and crucial on the long-term success of a company. While as much as the company is focused to have satisfied customers, as much they will repeat purchasing, spending more and expanding the product usage. The importance of

customer satisfaction and loyalty were highlighted in various studies and are considered crucial for the company's success, activating in the competitive markets (Chunzhen et al, 2023).

Customer satisfaction is influenced by a set of factors, including their history and the personality as well, where businesses must to adapt their offers based on the seasonal changes, different special occasions or holiday that in the end will be help them to maintain and grow their market share, because a continuous tracking of the customer satisfaction is essential to evaluate the service quality and the competitiveness (Chunzhen et al, 2023).

Customer centric approach must be adopted by the companies that want to stay relevant in a competitive market, where is the customer satisfaction is dynamic, influenced by a set of factors and is constantly changing over the past years where is affected by the technological evolution.

According to (Chunzhen et al, 2023) there is a set of key factors including service quality, product quality and value for money have a direct and positive impact on the customer satisfaction, where competitors that are very focused on the continuously improving the customer satisfaction level can be considered a competitive advantage and it's seen as a threat to the other companies that are acting in the same industry and their focused is not to meet their customers' expectations. It's relevant to maintain the employees' satisfaction first because they bring value and they have a significant role in the customer's satisfaction and overall experience (Chunzhen et al, 2023).

This study is structured as follows: in Introduction are presented the scope of the paper and the actual of the status of this subject, in the literature review are presented the theoretical concepts as mobile technologies and their evolutions, 5G architecture and ecosystem, telecommunication service quality dimensions as reliability, network quality, quality of services, customer support adding to the research model the information quality and information security, customer satisfaction in mobile communication, an overview of the Romanian mobile communication market, data was selected from the latest released report that is evaluating the mobile services provided in Romania, report released by The National Authority for Management and Regulation in Communications (ANCOM). The third section is methodology where is presented the research model, the profile of the respondents that took part of the survey, the structure of the survey and the used scale, data collection and analysis where the collected responses were analyzed using statistical tool as SPSS and the most important indicators for statistical research are presented: descriptive statistics, Cronbach's Alpha values for the dimensions, correlation analysis, bivariate regression where the hypotheses of the research were validated.   The fourth section is represented by the conclusions of the research.

2. LITERATURE REVIEW

The quality of mobile communication services, which is part of the broader field of electronic communications is a complex and compelling topic. This plays a crucial role in our daily lives, as consumers expect top-tier standards from mobile service providers. As nowadays quality has become a central element of business strategies, alongside profitability, electronic communications now carry significant social importance, effectively breaking down geographic and other barriers.

The concept of mobile communication has emerged from the convergence of telecommunications, media, and information technology sectors. It impacts not only the volume and structure of transmitted information but also improving quality of life. Mobile communication drives the development of an information society, providing a foundation for businesses, public institutions, and individuals to access modern communication networks and services within the global information infrastructure (Strenitzerová, 2018). The electronic communications sector is constantly evolving and customer satisfaction is considered a critical factor. While many companies offer similar products, what differentiates them is the quality of their services as it's considered a competitive advantage (Chunzhen et al, 2023; Strenitzerová, 2018).

In this competitive environment, the company that provides the best quality at the most competitive price ultimately succeeds (Strenitzerová, 2018). The concept of quality varies across different sources, and there is no single, universally accepted definition (Chunzhen et al, 2023; Strenitzerová, 2018). In this case while different authors are identifying the key dimensions of service quality that is considered essential, these are perceived differently by internal and external stakeholders. Marketing literature highlights three main dimensions: potential, process, and result (Chunzhen et al, 2023; Strenitzerová, 2018). According to (Strenitzerová, 2018) the potential dimension relates to the resources and capabilities of the service provider, the process dimension focuses on the sequence of service delivery activities, and the result dimension pertains to customer satisfaction with the service. Additionally, professional literature emphasizes two further dimensions: technical and functional. The technical dimension covers aspects like service setup and operation, while the functional dimension includes factors such as the provider's image, advertising, and staff quality (Strenitzerová, 2018).

TABLE 1. DIMENSIONS OF QUALITY IN ELECTRONIC COMMUNICATIONS SERVICES

Dimension of Quality	Characteristics of Dimension
Technical dimension of quality	Includes the extent of the service, i.e., "what" is offered to the customer. In this case, quality is understood as the sum or level of the existing characteristics of a product. It is measured based on objective criteria.
Functional dimension of quality	It interprets "how" a particular service is offered. Thus, quality is defined as the characteristics of a product as perceived by the customer. Quality is measured based on subjective criteria.

Source: Strenitzerová, 2018.

Starting with the evolution of wireless communication that has presented significant advantage over the past years, from 1G, mobile wireless communication evolved through 2G, 3G, 4G while the actual technology is the fifth generation (5G). The first generation (1G) introduced basic mobile voice services, the second generation 2G enhanced network capacity and coverage, the third generation (3G) was focused on increasing data transmission speeds, paving the way for the "mobile broadband" experience that became fully realized in 4G. The fifth generation (5G) was focused on enabling user devices to access multiple wireless technologies at the same time. The next generation is expected the incorporation of satellite networks, it is assumed that will be an increase of mobile calls and the seventh generation is speculated that the cost will be reduced while benefiting of low-income users (Adebusola et al, 2020).
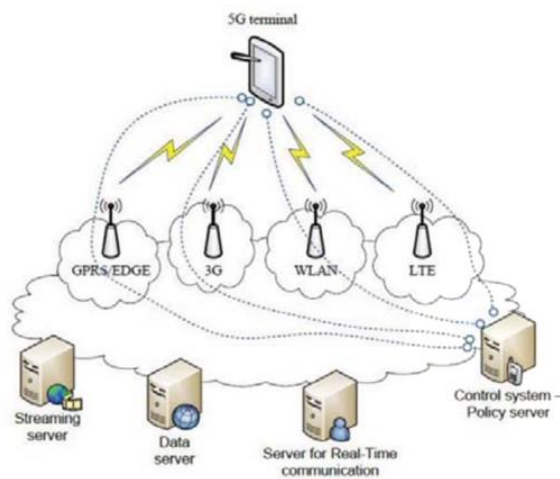
FIGURE 1. 5G ARCHITECTURE
Source: Adebusola et al, 2020.

Figure 1 illustrates the proposed all-IP-based design model of 5G mobile network architecture, where it's highlighted the interoperability of the architecture with various mobile networks. The model from Figure 1 incorporates multiple independent and autonomous radio access technologies, where the user terminal has a crucial role in the architecture. At the same time, the throughput was increased and were introduced significant advancements comparing to the previous generations as: improving the coverage, reducing the battery consumption, making possible higher data rates per unit area that was resulted in enhanced system spectral efficiency (Adebusola et al, 2020).

According to (Habibi et al, 2019) in the development of fifty generation of communication system it was focused on the following three key issues: increased capacity, massive connectivity, and diverse services.
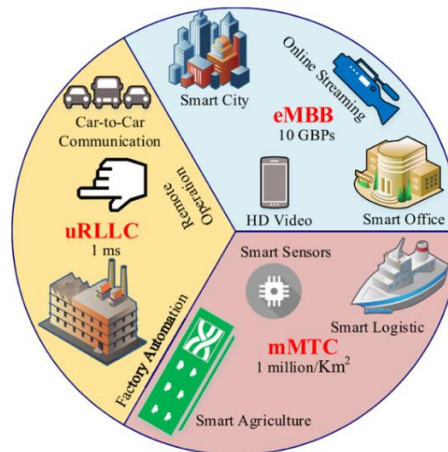
FIGURE 2. 5G MOBILE COMMUNICATION SERVICE CATEGORIES
Source: Habibi et al, 2019.

As presented in Figure 2, The International Telecommunication Union (ITU) according to (Habibi et al, 2019) classifies 5G services into three categories: enhanced Mobile Broadband known as (eMBB), massive Machine-Type Communications known as (mMTC), and Ultra-Reliable Low-Latency Communications known as (URLLC). Enhanced Mobile Broadband (eMBB) caters to general end-user needs like high bandwidth for activities such as web browsing and video streaming, while massive Machine-Type Communications (mMTC) supports services for a large number of connected devices, such as in smart cities or agriculture and the last category as Ultra-Reliable Low-Latency Communications (URLLC) was designed for latency-sensitive applications like autonomous driving and remote surgery, requiring extremely low latency and minimal packet loss (Habibi et al, 2019).
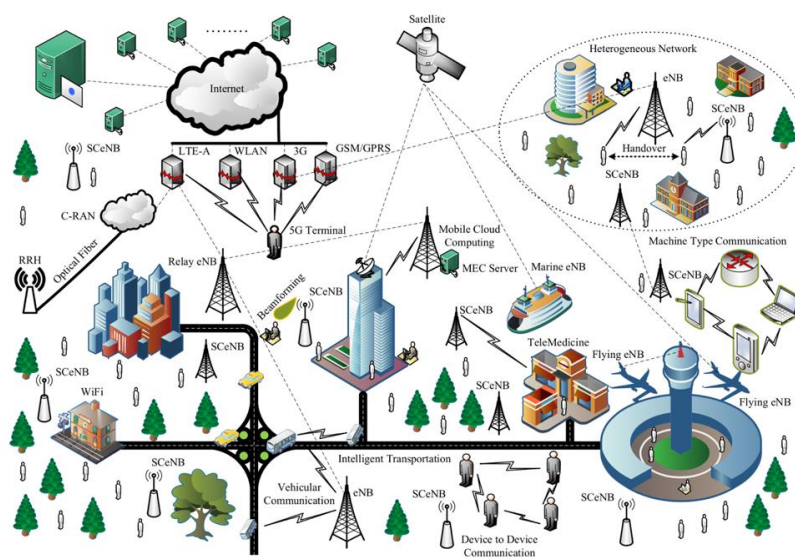

FIGURE 3. 5G MOBILE COMMUNICATION ECOSYSTEM
Source: Habibi et al, 2019.

According to (Habibi et al, 2019) the 5G services was expected to support different industries as healthcare, manufacturing, and automotive highlighted in Figure 3, which have unique quality of service (QoS) needs. To meet 5G requirements, a new architecture was needed for a complete network transformation, which includes a simplified core network with control and forwarding functions and a high-performance access network (Habibi et al, 2019).
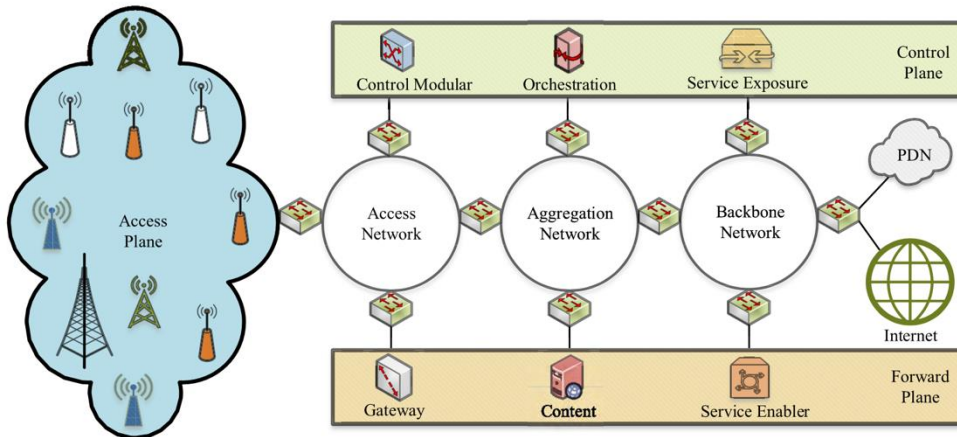

FIGURE 4. 5G MOBILE NETWORK ARCHITECTURE
Source: Habibi et al, 2019.

The 5G network is logically divided into three planes as described in the Figure. 4: Access, Control, and Forwarding. The Access Plane consists of various base stations (BSs) and devices, enabling flexible control and higher resource efficiency, while the Control Plane manages global network control strategies and the Forwarding Plane handles traffic routing between devices (Habibi et al, 2019).

The 5G infrastructure consists of an Access Network, Metropolitan Area Network (Aggregation Network), and Backbone Network. Control functions are distributed, with core control functions centrally located and access control at the network's edge to ensure low latency and high reliability (Habibi et al, 2019).

According to (Habibi et al, 2019) 5G access networks are multi-layered and heterogeneous, incorporating various RAN architectures, including macro, micro, femto, and picocells, along with unified multi-access technologies where these elements work together to improve edge processing and resource utilization.

According to (Abd-Elrahman, 2018) that has defined the perceived service quality as "a global judgment or attitude relating to the superiority of a service relative to competing offerings", has been analyzing the telecommunications service quality dimensions and concluded according to other authors who were studying the subject that reliability is one of the dimension and is defined as "the ability to perform a promised service in a precise and timely manner as well as the delivery of intact and correct products (or

services) at times that are convenient for customers" which is also supported by (Kumari, 2023). Based on that, the first hypothesis of this research is:

H₁ Reliability has a positive impact on customer satisfaction.

Beside reliability, network aspect that covers voice clarity, coverage area and frequency of dropped calls is another dimension, where according to the literature analysis, network element plays a major role in determining customer satisfaction, value and loyalty (Abd-Elrahman, 2018).

Another dimension is represented by customer support or service that encompasses a range of activities aimed at providing help to customers prior to, during, and beyond a purchase, where can be included: after-sale service, flexible pricing, method support, and training. The service is defined as the ability to resolve issues amicably, the consideration shown by customer care agents, the assistance offered by call centers, and the delivery of reliable guidance and it's considered an important factor in determining perceived value, client loyalty, and satisfaction (Abd-Elrahman, 2018). Based on these arguments the second hypothesis is:

H₂ Customer support has a positive impact on customer satisfaction.

According to (Kumari, 2023) network coverage and signal quality have always been crucial factors in choosing MTS providers, where nowadays it was notices as an improvement in signal quality and significant growth in the firm networks due to the technological advancements and according to surveys, network coverage and signal quality both favorably impact customer satisfaction and the company's reputation. Based on that the third hypothesis is:

H₃ Network quality has a positive impact on customer satisfaction.

In the context of telecommunications, quality of service (QoS) refers to a collection of specifications that users are given by a network and that are required to accomplish the necessary functionality of an application (service). Users define their performance needs in terms of Quality-of-Service criteria such packet loss or latency, and the network uses various QoS algorithms to commit its bandwidth in order to meet the request (de Gouveia, F. C. & Magedanz, T. 2009).

In the business market, a service's quality can set it apart from the competition. When choosing services given by various vendors (or service providers), its characteristics and measurements are crucial since they provide an indicator of how well a service or product is. When services are equal in terms of features and cost, quality becomes the distinction for customers. Service providers can also utilize quality to project an image of being a "respected" provider (de Gouveia, F. C. & Magedanz, T. 2009).

Challenging situations that cause QoS to degrade can be summarized as follows (de Gouveia, F. C. & Magedanz, T. 2009):

a. Congestion, which is caused by traffic overflow (Bottlenecks);

b. Delays, caused by networking equipment low performance in large loads, as well as caused by distance or retransmission of lost packets;

c. Shared communication channels, where collision and large delays become common, and

d. Limited bandwidth networks with poor capacity management.

QoS must drive resource management in order to deliver and maintain QoS. The resource management system must take into account several factors while allocating resources, including (de Gouveia, F. C. & Magedanz, T. 2009):

- resource availability;
- resource control policies, including Service Level Agreements (SLA);
- QoS requirements of applications, which are quantified by QoS parameters (e.g. Jitter, Delay, Packet loss).

Since the end locations are far apart and it will take some time for the information to get there, delay is essential to communications.

According to (de Gouveia, F. C. & Magedanz, T. 2009). Service Level Agreements known as SLAs are formal contracts that define business goals and expectations between two parties, such as users and network operators, or between network operators and service providers. SLAs highlight the terms of the service delivery, where are included the performance standards, pricing, penalties for non-compliance, and potential incentives for exceeding service levels. They are considered crucial for ensuring end-to-end Quality of Service (QoS) (de Gouveia, F. C. & Magedanz, T. 2009).

There are defined three types of SLAs (de Gouveia, F. C. & Magedanz, T. 2009):

1. Customer SLA: which specifies the services provided to customers in a clear, understandable way, focusing on the end-to-end delivery of the product.

2. Supplier SLA: which defines performance objectives for service components provided by third parties, based on agreements between service providers and operators.

3. Internal SLA: which manages internal resources and services within an organization, ensuring alignment with either customer or supplier SLAs.

Based on these the fourth hypothesis of this research is:

H$_4$– Quality of Services has a positive impact on customer satisfaction.

According to (Alshikhi & Abdullah, 2018) the information quality was defined as the "ability to satisfy stated and implied needs of the information consumer." and the quality perspective of satisfying consumers' expectations is frequently adopted in the literature on information quality.

Information quality and user satisfaction are two of the main metrics used in literature to evaluate the operability of the information system and authors that were studying this topic were concluded that the

following Data Quality (DQ) characteristics are part of information quality and user satisfaction: currency, completeness, accuracy, timeliness, precision, reliability, and relevancy. Interpretability and accessibility are a couple of other dimensions (Alshikhi & Abdullah, 2018).

Information quality dimensions are the following (Alshikhi & Abdullah, 2018):

1. Accuracy: is referring to the extent in which data can represent reality.

2. Integrity: is defined as the consistency of the structure of data and relationships among the entities and attributes.

3. Consistency: is referring to the consistency in the definition of the data elements.

4. Completeness: is referring to all necessary data being present.

5. Validity: is defined as data values falling within the defined ranges.

6. Timeliness: is referring to data that must be available when needed.

7. Accessibility: is referring to the data that must be accessible, comprehensible, and usable.

Based on that, the fifth hypothesis of this research is:

H$_5$ Information quality has a positive impact on customer satisfaction.

Information security is defined by IBM as "the protection of important information against unauthorized access, disclosure, use, alteration or disruption" and helps guarantee that confidential and integrity-preserving sensitive organizational data is accessible to authorized users (www.ibm.com).

The foundation of information security procedures is a collection of enduring, ever-changing principles:

- The CIA triad
- Information assurance
- Nonrepudiation

A continuum of users, from privileged insiders having access to much of the company's data to outsiders permitted to view only information the public is permitted to view, is defined by confidentiality, which is the assurance that parties cannot access material they are not authorized to view (www.ibm.com).

Integrity refers to making certain that every piece of data in business databases is correct and comprehensive. The goal of integrity measures is to prevent unauthorized additions, deletions, or other forms of data manipulation. Preventing both hostile actors who knowingly change data and well-meaning people who change data without authorization falls under the category of data integrity (www.ibm.com).

Availability requires that information security procedures and rules not obstruct authorized data access and guarantees that users can obtain the information they are permitted to access when needed. A lot of availability is simple, like making ensuring that software and hardware are reliable enough to keep an organization's websites from going down (www.ibm.com).

Information assurance refers to the continuous process of guaranteeing data availability, confidentiality, and integrity within an information system (www.ibm.com).

Because the user had to pass authentication to complete the transaction in the first place, nonrepudiation means that the user cannot retract or deny having conducted a transaction, such as changing data or sending a message. Nonrepudiation combines elements of information integrity and confidentiality, even though it isn't strictly speaking a component of the CIA trinity. Ensuring that only authorized users interact with data and that they can only use or modify it in ways that are permitted is known as nonrepudiation (www.ibm.com). Based on that, the sixth hypothesis of the research is:

**H_6 Information security has a positive impact on the customer satisfaction.**

According to (Raport anual ANCOM 2023, 2024) will be presented the most important news about mobile services provided by telecom operators in Romania as follows: at mid-2023, the total number of active mobile internet connections (21.3 million) showed a slight increase (+1%), and 75% of these were 4G and/or 5G connections (15.9 million). The number of 5G connections more than doubled in the first half of the year compared to the previous half year, exceeding 1.5 million connections. Of the total number of mobile internet connections, almost 20 million connections are related to mobile telephony, the rest are dedicated to mobile internet, accessed via modem/card/USB. Average mobile internet traffic grew by 4% in half 1 of 2023 to reach 9.2 GB per inhabitant/month, or almost 307 MB/day. The market shares of the main mobile internet providers, based on the number of active connections, in mid-2023, were recorded by the Orange group with 38%, RCS&RDS with 26% and Vodafone with 24% (ANCOM, 2023, 2024). On the mobile side, the number of active users remained relatively constant at 23.4 million in half 1 of 2023. Of these, 66% were subscription-based users and 34% prepaid card-based. Total voice traffic decreased by 3% to 30.5 billion minutes, while the average mobile traffic per inhabitant was 4 hours and 27 minutes/month and 16 SMS/month, respectively. Based on the number of active SIM cards at mid-2023, Orange Group had a market share of 36%, Vodafone 29% and RCS&RDS 23% (ANCOM, 2023, 2024). Based on the data released by ANCOM regarding the reported security incidents can be concluded that mobile phone and SMS services were the most affected (3.9 million affected connections), followed by mobile internet and mobile data (2.6 million affected connections). With regard to the resources that were affected, 140 incidents affected resources at the support level (where the supporting components of the equipment are located, such as those used for power supply, monitoring and temperature control systems, electrical installations), 171 incidents affected resources at the logical level (where the software elements of the equipment and/or resources are located) and 33 incidents affected resources at the physical level (where the hardware components of the equipment and/or resources are located). The most affected resources belong to the categories: transmission media (185 incidents), base stations and mobile controllers (126 incidents), equipment in transmission nodes (22 incidents) and IP routers and switches (17 incidents) (ANCOM, 2023, 2024).

3. RESEARCH

3.1 Methodology

Based on the scientific research of the relevant studies that were focused on the customer satisfaction of the mobile communication in different countries, the actual research model was adapted from (Kar, 2019) and is presented in the Figure 5.

The research used a quantitative method, an exploratory study as a questionnaire that was online distributed to the respondents. Research model contains 6 dimensions that were designed to determine the customer satisfaction of the mobile communication services delivered by telecom operators in Romania.
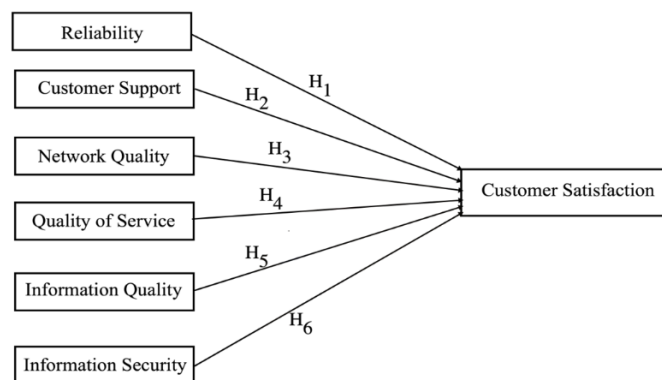
FIGURE 5. RESEARCH MODEL
Source: Authors' own contribution

In Table 2 is presented the profile of the respondents that took part of this research.

TABLE 2. PROFILE OF THE RESPONDENTS

Respondents' age and studies	Female	Male	Grand Total
18 - 24	2	3	5
Bachelor's Degree	1	1	2
High school Degree		2	2
Master's Degree	1		1
25 - 34	29	8	37
Bachelor's Degree	7	4	11
Doctoral degree	2	1	3
Master's Degree	20	3	23
35 - 44	3	5	8
Bachelor's Degree		2	2
Doctoral degree	1	1	2
Master's Degree	2	2	4
45 - 54		1	1
Bachelor's Degree		1	1
Grand Total	34	17	51

Source: Authors' own contribution

3.2 Questionnaire design

The questionnaire has two parts as follows: the first part is represented by three questions as demographic factor and the second part is represented by seventeen questions that are evaluating the proposed dimensions using a five points Likert scale. Customer satisfaction of the mobile communications was analyzed based on six dimensions which were also determined using 17 questions, presented in Table 3.

TABLE 3. QUESTIONNAIRE STRUCTURE

Variable	Number of items
Reliability	3
Network Quality	3
Quality of Services	4
Information Quality	2
Customer Support	3
Information Security	2

Source: Authors' own contribution

Reliability was determined by 3 items as: network reliability, commitment to resilience by the company and the ability to perform service dependably and accurately. Network quality was determined by 3 items as: network coverage, network availability and delay. Quality of services was determined by 4 items as: resource availability, resource control policies, including Service Level Agreements (SLA), speech quality, service availability. Information quality was determined by 2 items selected from its dimensions as accuracy and completeness.

Customer support is determined by 3 items as: response time, problem solving skills and the clear communication of the customer support operators that are representing the telecom operator. Information security was determined by 2 items as: the ability of the telecom operator to securely store the customer data and the importance of personal data confidentiality and the visibility of the efforts to protect the customer data. Customer satisfaction was determined by one item as: the overall satisfaction of the services delivered by the telecom operator.

4. FINDINGS AND DISCUSSIONS

The responses were collected though an online survey and the following tables were obtained using statistical tool as SPSS. First it was performed Factor Analysis to determine KMO value and test of sphericity that are presented in the Table 4.

TABLE 4. KMO AND TEST OF SPHERICITY

Kaiser-Meyer-Olkin Measure of Sampling Adequacy		.865
Bartlett's Test of Sphericity	Approx. Chi-Square	192.901
	df	15
	Sig.	.000

Source: Authors' own contribution based on SPSS results

According to theory, KMO measures the sampling suitability, which means if the responses given with the sample are adequate or not. (Kaiser, H. F. 1974) recommend 0.5 (value for KMO) as minimum (barely accepted), values between 0.7-0.8 acceptable where can be concluded that for this research it was obtained the acceptable value.

Table 5 contains the descriptive statistics for all the dimensions of the research model.

TABLE 5. DESCRIPTIVE STATISTICS

Factor	Minimum	Maximum	Mean	Std. Deviation
Customer Satisfaction	2	5	3.86	.7830
Reliability	2	5	3.718	.7756
Network Quality	1.75	5	3.544	.7610
Quality of Services	1	5	3.598	.9221
Information Quality	1	5	3.324	.9530
Customer Support	1.3	5	3.405	.7538
Information Security	1	5	3.86	.917

Source: Authors' own contribution based on SPSS results

The obtained value for Cronbach's Alpha is between .07 and 0,8 which shows that the reliability among the items is consistent and was obtained a good strength of association according to (Hair et al, 2016) for the dimensions of the research model, presented in the Table 6.

TABLE 6. RELIABILITY STATISTICS FOR THE CONSTRUCTS OF THE STUDY

Variable	Cronbach's Alpha (α)	Number of items
Reliability	0,771	3
Network Quality	0,740	3
Quality of Services	0,720	4
Information Quality	0,709	2
Customer Support	0,711	3
Information Security	0,763	2

Source: Authors' own contribution

In the Table 7 are presented the values obtained after it was performed the correlation analysis where will be determined if there is a significant association between the customer satisfaction and the dimensions of the research model.

TABLE 7. CORRELATION AMONG THE VARIABLES

Variable	R	NQ	QoS	IQ	CS	IS	CSatisf.
Reliability	1	.766**	.717**	.579**	.675**	.702**	.685**
Network Quality	.766**	1	.758**	.636**	.547**	.684**	.732**
Quality of Services	.717**	.758**	1	.642**	.608**	.559**	.589**
Information Quality	.579**	.636**	.642**	1	.624**	.513**	.548**
Customer Support	.675**	.547**	.608**	.624**	1	.455**	.420**
Information Security	.702**	.684**	.559**	.513**	.455**	1	.868**
Customer Satisfaction	.685**	.732**	.589**	.548**	.420**	.868**	1

**Correlation is significant at 0.01 level (2-tailed).

Source: Authors' own contribution based on SPSS results

The highest correlation coefficient as r= 0,869 was obtained between customer satisfaction and information security where is a significant correlation at p< 0,01 level. The next correlation coefficient is r=0,732 and it between the customer satisfaction and network quality. Looking at the correlation of the model variables can be concluded that the there is a correlation coefficient higher than 0,5 which means correlation is significant at 0.01 level.

It was performed a bivariate regression for model testing where the dependent variable is Customer Satisfaction and the dimensions of the research model as Reliability, Network Quality, Quality of Services, Information Quality, Customer Support, Information Security are the predictors. Table 8 contains the model summary results of the bivariate regression.

TABLE 8. MODEL SUMMARY

Model	R	R Square	Adjusted R Square	Std. Error of the estimate
1	0,892	0,797	0,769	0,441

Source: Authors' own contribution based on SPSS results

R Square according to (Hair, 2016) shows the amount of variation in one variable that is accounted for by another variable, where in this case there is 79,7% of variance of the independent variable and the customer satisfaction is explained by the independent variables. A larger R Square indicates a stronger relationship between the independent variables and the dependent measure according to (Hair, 2016) while the Table 9 contains the ANOVA results.

TABLE 9. ANOVA RESULTS

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	33.486	6	5.581	28.709	.000
	Residual	8.553	44	.194		
	Total	42.039	50			

Source: Authors' own contribution based on SPSS results

The F ratio is the result of comparing the amount of explained variance to the unexplained variance according to (Hair, 2016), where is in this case F ratio is 28.709 and in the same time can be concluded that it's a strong relationship between the customer satisfaction and the dimensions of the research because it was obtained a significant value as .000.

Regression coefficients tell us how much of the variance in the dependent variable is explained by the independent variable according to (Hair, 2016) and in the Table 10 are presented the results obtained for the coefficients.

TABLE 10. BIVARIATE REGRESSION RESULTS

Hypothesis	Path	Standardized coefficient (β)	t	Sig.	Results
H_1	R -> C. Satisfaction	0,49	0,371	0,713	Supported
H_2	CS-> C. Satisfaction	-0,107	-1,05	0,3	Not supported
H_3	NQ-> C. Satisfaction	0,222	1,725	0,092	Supported
H_4	QoS-> C. Satisfaction	0,017	0,143	0,887	Supported
H_5	IQ-> C. Satisfaction	0,088	0,877	0,385	Not supported
H_6	IS-> C. Satisfaction	0,677	6,653	0.000	Supported

Source: Authors' own contribution based on SPSS results

The column labeled "Sig." indicates the statistical significance of the regression coefficient for every dimension of the research model. The t-test tells whether the regression coefficient is different enough from 0 to be statistically significant. The hypotheses of this research were validated based on correlation analysis and bivariate regression performed in SPSS. Four hypotheses were supported as reliability, network quality, quality of services, and information security have positive impact on customer satisfaction, while the hypotheses related to the information quality and customer support were not supported. The results were obtained based on the received responses from the respondents and the cause could be the lack of data or the collected data was not enough to generate a clear analysis to test all the hypotheses.

5. CONCLUSIONS

The aim of this study was to identify the customer satisfaction on the mobile services provided by telecom companies, where the research model contains six dimensions that influence the customer satisfaction, dimensions that were selected from different studies presented as the references. There were formulated six hypotheses, that represent every aspect of the model and using statistical tool SPSS, the results were analyzed and were performed correlation analysis and bivariate regression. In the literature review there were presented the most important subjects that were discussed and addressed in the questionnaire applied to the respondents, as: reliability, customer support, network quality, quality of services,

information quality and information security. The dimensions were selected to take part of the model as covers all the aspects that every customer should pay attention when choose a telecom operator or when evaluates the satisfaction of the service provided, according as well to authors that were studied the factors that can influence the customer satisfaction in mobile services. According to SPSS results, the model was found to be statistically significant and based on correlation analysis and bivariate regression reliability, network quality, quality of services and information security have a positive impact on customer satisfaction, while hypotheses that cover customer support and information quality were not support. As the causes can be concluded that it was difficult to be determined the satisfaction of customer support and information quality, the sample or the items chosen for these two dimensions were not enough to generate a clearer analysis. The hypothesis "Information security has a positive impact on the customer satisfaction" was supported by the results due to the technology evolution where information technology plays a critical role for telecom operator because they are responsible to protect the customers data and for the customers as well because their data represent nowadays a target for the cyber thieves. Network quality plays an important role because the quality of entire infrastructure and all the used equipment and network elements have an impact on the quality of the services delivered by the telecom operator to its customers. Quality of services is considered a challenge for telecom operators and represents in the same time a competitive advantage because the customers can choose a variety of offers while they are looking for continuously improvements in the quality of the available services. Telecom operators must focus on investment and decisions to preserve its leadership and appeal, an operator must provide its consumers with the highest possible quality of service (QoS) on its mobile network, in particular: optimal coverage, accessibility and continuity throughout the operated territory, good voice quality, and convenient data rates. As every study has limitation, the main of this one is the sample of the questionnaire. For future research it will be consistent to extend the sample and the questionnaire to be applied to a higher number of respondents. The results obtained in this study are specific and strictly related to the responses given by the respondents, results that cannot be generalized. As future work, it will be relevant to apply the same model for a higher sample.

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