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Issues of developing services for mobile communication companies in the trend of m-government

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Abstract— This article examines measures to enhance the service life of devices by implementing a comprehensive preventive maintenance plan to ensure reliability and usability of mobile communication infrastructure in the "M-Government" environment of mobile communication companies. The aim is to provide high-quality services to users while increasing and supporting the customer base of service providers. This is achieved by studying customer relationships based on an analysis of customer satisfaction, retention, loyalty, acquisition, and attrition criteria. The importance of providing analytical information about each of the key indicators influencing customer relationships to the management of mobile companies is also highlighted.

Keywords— communication, mobile communication, infrastructure, management.

1. INTRODUCTION

Today, mobile communication companies are facing complex challenges due to changing customer demands and the necessity to maintain competitiveness. As always, customers continue to seek high-quality service, low prices, and exemplary treatment from these companies. Mobile communication companies that provide services strive to improve their service quality in order to gain the trust and loyalty of their customers. Statistical data is crucial for companies providing mobile communication services as it helps increase the overall performance of the system, enabling them to forecast their customers' activities and evaluate the efficiency of devices. This approach focuses on two objectives: extending the service life of devices to provide a quality of service that satisfies customers, and maintaining and increasing the number of customers to improve the company's financial revenue.

2. RELATED WORKS

In the field of mobile communications, customer relations are considered a priority task for achieving business advantages, increasing efficiency, and monitoring customer activities. In this highly competitive market, customer retention has become the primary goal of companies providing mobile communication services, and attracting new

customers is considered a more valuable measure than retaining existing users of the company's services. According to AL Rashed, one of the leading researchers in this field, "Successful implementation of a customer relationship management system can play an important role in the strategic position of the organization" [1]. Customer relationships consist of the following various factors that need to be taken into account: satisfying customer needs; retaining customers; customer loyalty; attracting customers. Effective customer relationship strategies can significantly enhance company profitability and sustain competitive market positioning.

3. METHODS

Furthermore, analyzing customer churn is a crucial element of customer relationships, as the performance of mobile communication service providers and their customers' behavior are measured by the rate of customer attrition. It is appropriate to consider two potential viewpoints that may arise in the mobile communication services sector:

1. "Experts" and "Customers" can be viewed as technical factors, as they influence new services provided by mobile communication companies and the associated challenges;

2. Technical issues can be considered as problems encountered in mobile communication devices. In this context, ensuring the proper functioning of the mobile network requires facilitating correct interaction among numerous devices. This involves monitoring not only the basic mobile communication devices but also all supporting equipment, as well as the environmental conditions necessary for the proper operation of all equipment. In this regard, four categories of factors need to be taken into account:

- Mobile communication devices;
- Power sources;
- Environmental conditions.

The performance indicators of mobile communication service providers are summarized based on the following criteria:

- Call drop rate (dropped-call rate);
- Communication line load;
- Noise ratio;
- Data transmission speed.

Service-related issues may occur in mobile communication systems, as well as in connection with the services being provided. In such cases, customer complaints may arise due to communication disruptions, slow internet speeds, pricing and offers, and problems related to roaming options.

4. RESULTS

Therefore, it is crucial to focus on customer relationships and device capabilities in the mobile communications sector. Devices play a significant role in improving service delivery and thus meeting customer needs, as well as in establishing relationships with customers to understand their behavior. One of the key components of the research is examining the structure and function of mobile networks, how services operate, the role of equipment in the process, and various issues that may arise in this sector from both customer and engineer perspectives. Subsequently, we identified the key indicators of relationships between customers and mobile service providers. This allows us to determine the immediate objective of the research and how to achieve the final outcome.

The role of devices in mobile communication networks is to provide effective communication services. Communication towers, switches, and routers are some examples of telecommunications equipment. "Communication devices are any equipment used for telecommunications purposes. They encompass a wide range of communication technologies" [2].

Communication devices are the most crucial component for mobile communication service providers, as they play a central role in customer service and therefore directly impact the success of businesses based on customer relationships and service delivery.

To optimize the operation of communication devices, it is advisable to consider them from the perspective of energy consumption and maintenance importance. In this study, analyzing various statistical approaches to determine the most effective technical support for extending the device's service life will help identify the best solution. When assessing the device's effectiveness, it is necessary to consider aspects such as "Original Equipment Manufacturer," "Cost-effectiveness of Communication Equipment," "Efficiency of Communication Device Inventory Management," and "Total Productive Maintenance."

An original equipment manufacturer (OEM) is a corporation that manufactures spare parts and equipment but may sell them under another company's brand. "Original equipment manufacturers (OEMs) worldwide continue to actively source products from China in order to reduce costs and gain a competitive advantage." [3] "Cost savings is the most frequently cited motivation for purchasing goods from China." [4] It was noted that Huawei, Cisco Systems, Fujitsu, NEC Corporation, Nokia, Ericsson, and Qualcomm are the world's leading communication device companies. [2] "Saving costs is the most frequently cited motivation to buy goods from China." [4] Huawei, Cisco Systems, Fujitsu, NEC Corporation, Nokia, Ericsson, and Qualcomm are the world's leading communication device companies. [2]

The economic efficiency of a communication device is determined by many variables, such as energy usage, cooling costs, turning on/off the base station, the use of hybrid energy

systems, and the integration of new technologies. "It has been observed that almost 50% of energy consumption is attributed to the operation of mobile communication networks." [5] "70% of mobile towers in India experience more than 8 hours of power outages per day." [6] Therefore, a mobile communication base station must have a generator and/or battery to support it, depending on the number of existing base stations it has. "70% of mobile towers in India experience more than 8 hours of power outages per day" [6]. Therefore, a mobile base station must have a generator and/or battery to support it, which depends on the number of base stations it has.

Companies providing mobile services are required to be constantly working to improve performance indicators and revenues. The basis of such companies' income is their clients, that is, their individual clients and corporate clients. The comparative advantage between companies is mainly the first step towards achieving this goal through effective customer experience management and better understanding of customers. Customer satisfaction is an important growth factor for companies providing mobile services. A healthy work relationship helps increase sales and gives a competitive advantage to a service company. The goal of companies providing mobile services is to retain existing subscribers and increase overall revenue from their services. Therefore, in this study, it is extremely important to study key customer experience indicators (satisfaction, retention, loyalty, engagement, and consumption analysis) and highlight the significant impact of each variable, as well as the factors directly influencing the increase in the proportion of subscribers who leave. This is useful for management because it helps identify key customer relationship analytical metrics that help understand customer behavior and develop value-added strategies. In addition, it is advisable to consider the statistical methodologies used in the study of customer relationships.

- Leading scientists in this field, Kotler and Armstrong, noted that customer satisfaction is very important for the activities of mobile operators, and that satisfied customers will buy the product again, speak positively about the product to others, and pay less attention to competing brands and advertisements [8]. When evaluating the telecommunications industry as a whole, it is necessary to consider variables that have a significant impact on customer satisfaction. There are two types of clients: individual clients and corporate clients. The level of satisfaction for individual customers is significantly influenced by the quality of service, price, staff, customer expectations, the response of the service provider to customer complaints, and many other factors related to communication and payment methods, which are used by companies providing mobile communication services. [7]. Corporate customer satisfaction is influenced by various factors, which are typically checked depending on the type of customer and the type of services that corporate customers require. Internet speed, service availability, security features, and additional services are important factors that increase the level of customer satisfaction of this type.

- Customer retention is an integral part of their business for companies providing mobile services, as customer retention is part of customer relationship management [9]. For mobile operators in a competitive and saturated market, more

attention is being paid to examining factors that are very critical to customer retention. These factors include the ability to change the mobile network, barriers to switching to offered services, improvement, brand image, the ability to compare prices with other mobile companies, and other factors: demographic changes, customer satisfaction, social media and online chat activity.

- Customer loyalty is defined by Zineldin as an obligation to continue doing business or to constantly exchange information with a particular company [10]. It is difficult to get back loyal customers, and mobile companies will benefit from these customers by increasing their sales and profits. Service quality is positively and significantly linked to customer loyalty. Scientists have presented several important factors that determine customer loyalty, such as customer satisfaction, service quality, brand image and customer value, reliability and service guarantee, commitment and commutation costs, and more.[11]

In the mobile industry, attracting new customers has become the most challenging task a company can face, especially with a saturated market, as well as mature customers who can compare services.

In their research, Ellegaard and Ritter claim that the value of engagement and relationships are highly dependent concepts.[12] To attract customers, management plans need to be successfully implemented, and one of these plans is to invest in technology, work to improve the brand image, offer low prices for services, as well as provide exclusive offers aimed at the public. In their work, researchers have listed various factors that can influence customers to engage in a particular service provider, in particular, technology, branding, price, offers, and social responsibility.

- Customer dissatisfaction is an important and challenging area of learning for mobile companies to understand their customers' behavior and improve their relationships with them. Customer dissatisfaction refers to the consumer's departure from the company, their transfer to a profitable enterprise, or their complete departure.

It has been shown that customer attrition has a huge impact on companies, and a 5% reduction in customer dissatisfaction increases a mobile company's profits from 25% to 85% [13, 14]. Moreover, demographic and non-demographic factors have a significant impact on customer departure analysis. These factors include age, nationality, gender, years of experience, monthly billing, service quality, brand image, advertising, and customer service team.

5. CONCLUSION

This article considers measures to increase the service life of the device by implementing a comprehensive preventive repair plan to ensure the reliability and usability of the device in order to provide high-quality services to users of the mobile communication infrastructure in the "M-Government" environment of mobile communication companies, as well as to increase the number of customers and support companies providing services by studying customer relationships based on an analysis of customer satisfaction, retention, loyalty, acquisition and loss criteria. This article highlights the importance of providing analytical information about each key indicator that influences customer relationships in the management of mobile companies.

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