Assessment of Service Quality in Telecommunications: A Study of Customer Satisfaction in Service Centers in Benghazi, Libya

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تقييم جودة الخدمة في قطاع الاتصالات: دراسة حول رضا العملاء في مراكز الخدمة بمدينة بنغازي، ليبيا

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Abstract:

The study considers the quality of service of Al-Madar, a large telecom supplier in Libya, using five dimensions of the SERVQUAL model': tangibles, reliability, responsiveness, assurance and empathy. Data was collected from customers at the Service Center in Benghazi, with additional analysis, the effect of demographic factors such as gender, age, education, monthly income was examined, and frequency was visited on perceptions of service. Conclusions suggest that the strongest performance of Al-Mader is inherent in assurance, reliability and tangibles, indicating high customer safety, service stability and quality of the physical facilities of employees. Older customers and people with basic education reported high levels of satisfaction, especially in assurance and tangibles However, responsiveness and empathy scored less, suggesting opportunities for the speed of service and improvement in personal interactions. These results are in line with previous studies, which emphasize the importance of professionalism, reliability and service environment to promote customers' satisfaction and loyalty. The study has recommended training of employees who are targeted to increase responsiveness and empathy along with further investments in digital service quality to meet customer expectations.

Keywords: Service Quality, SERVQUAL, Customer Satisfaction, Telecommunications, Tangibles.

الملخص

تتناول هذه الدراسة جودة خدمات شركة المدار، وهي إحدى أكبر مزوّدي خدمات الاتصالات في ليبيا، بالاعتماد على الأبعاد الخمسة لنموذج SERVQUAL وهي: الملموسية، الاعتمادية، الاستجابة، الضمان، والتعاطف. تم جمع البيانات من العملاء في مركز الخدمة بمدينة بنغازي، كما تم تحليل تأثير العوامل الديموغرافية مثل الجنس، العمر، المستوى التعليمي، الدخل الشهري، وعدد مرات زيارة المركز على تصورات العملاء لجودة الخدمة. تشير النتائج إلى أن أقوى مجالات الأداء لدى شركة المدار تتمثل في الضمان، والاعتمادية، والملموسية، مما يعكس ارتفاع مستوى الأمان لدى العملاء، واستقرار الخدمة، وجودة المرافق المادية والموظفين. كما أظهر العملاء الأكبر سنًا وذوو التعليم الأساسي مستويات عالية من الرضا، خاصة فيما يتعلق بالضمان والملموسية. ومع ذلك، سجّلت الاستجابة والتعاطف درجات أقل، مما يشير إلى وجود فرص لتحسين سرعة الخدمة وجودة التفاعل الشخصي. تتفق هذه النتائج مع دراسات سابقة تؤكد على أهمية الاحترافية، والاعتمادية، وبيئة الخدمة في تعزيز رضا العملاء وولائهم. وقد أوصت الدراسة بتدريب الموظفين بشكل

موجّه لزيادة مستوى الاستجابة والتعاطف، إلى جانب المزيد من الاستثمارات في جودة الخدمات الرقمية لتلبية توقعات العملاء.

Introduction

The Telecommunication sector is the most vital part for development and economic assistance for a region, especially in developing countries as high-speed digital transformation era is rapidly evolving in these regions as reported in [1]. Telecommunication companies are vital in connecting people and providing cellular telephony and internet services in Libya. One of the largest telecom providers in Libya, Al-Madar, has a multitude of customer service centers which act as the first line between the company and their users. Although both the coverage of services and service quality have improved, customer satisfaction remains a concern. It is widely recognized that service quality significantly affects customer satisfaction, loyalty and overall business performance as in [2,3].

That capability, explained in practices telecommunications in the telecommunication sector, the ability of a company to provide its services at high quality levels in real-time is borne out by customer satisfaction and hence its organizational competitive advantage as in [2]. Parasuraman et al, put forth the SERVQUAL Model proposed by SERVQUAL [4]. in which service quality comprises five dimensions: tangibles, reliability, responsiveness, assurance and empathy.

This research using model SERVQUAL to measure service quality perception of customer over counter services in Al-Madar customer service centers in Benghazi- Libya. The research provides insights so that the service strengths and weaknesses, from a customer perspective, can be defined in order to improve operations and consequently increase customer satisfaction. The results also complement a scanty academic literature related to service quality evaluation in the telecommunications sector, with regard to Libya; subsequently providing grounds for further research as well as industry benchmarking.

Literature Review:

The SERVQUAL model [4] has helped to make the understanding of service quality a cornerstone in service management research for many years. It postulates five major dimensions, which are often used to evaluate customers perception of service delivery. Factors that have been examined and confirmed that this model could be applied in other industries such as a Telco industry where the quality of service has become crucial for determining customer satisfaction, loyalty, and retention as reported in previous studies [5,6]

Serious research activities using SERVQUAL, e.g. conducted for the telecommunications sector in Ghana, Pakistan and India, Studies [7,8,9] show that the model is able to measure customer service performance. For Ghanaian telecom users for example, found that responsiveness and reliability are the factors which influence customer satisfaction higher than others. while competing Telecom providers have identified significant differences in service quality dimensions across Pakistan, India which shows the clear effect of implementing the local evaluation. In similar vein, other academic researchers [10,11] have also attached great importance to the role of assurance and empathy in building trust as well as long-term relationships with customers.

In Libya, the telecoms sector is faced with serious challenges after years of civil conflict, with infrastructure including up to a quarter of mobile towers destroyed or stolen and many service interruptions as reported in [12,13]. Political polarization and low quality of governance, in addition to weak performance of the governments, had impede recovery actions and upgrades of national telecommunication infrastructures reported in [13,14]. Even though this kind of infrastructure is largely absent in its full form, there has been increased rivalry among companies from urban areas like Benghazi, especially between Al Madar and Libyana This competitive pressure calls for a better performance in customer service delivery and operational efficiencies as reported in [15].

In spite of the fact that, international research have always supported as well the strong impact of increasing responsiveness, assurance and empathy on raising also level of customer loyalty (with practice tested firm performance), there is no enough empirical evidence within this relationship in Libyan juice sector. Therefore, a rich consideration of service quality in its context will provide a useful point at which to consider opportunities for future research and tangible improvements of the customer experience.

Material and methods

A structured questionnaire based on the SERVQUAL techniques to measure customer satisfaction of service quality in Almadar center at Benghazi -Libya. Parasuraman et al. introduced and modifies the SERVQUAL model which is one of the most popular instruments to measure service quality in five dimensions: Tangibles, Reliability, Responsiveness, Assurance and Empathy [5]. The questionnaire was composed of two sections: the first gathered demographic information from responders and the

second included 22 statements (belonging to five SERVQUAL dimensions). Answers were scored based on a 5-point Likert scale (1 = strongly disagree, 5 = strongly agree).

The sample size was estimated using a simplified formula for proportion given by [16] appropriate for situations in which the total population is large or unknown. We made a conservative assumption here, treating the population as large as an official record of daily customer volume at the Al-madar service center is not available.

$$n = \frac{N}{N^2\,(e) + 1}$$

Where:
n = sample size
N = assumed population size
e = desired margin of error

The study was conducted over a period from February 1 to March 3, 2024) through an online questionnaire that distributed by social media platforms dealing with Almadar company customers. Data was analysed using Minitab17, and descriptive statistics (mean scores); SERVQUAL analysis to measure service quality perceptions by customers.

This research was conducted on the viewed service quality at Customer Service center Almadar Aljadeed, a leading operator in the telecommunications market of Libya. Data collection: Data were collected at the Almadar service center by observation and direct questioning of customers who visited the service center between May and June 2024 for two-time spans

A total of 152 valid answers were collected from customers, which includes 108 men and 44 women. To compare inner stability, the reliability of the questionnaire was evaluated the use of the Alpha of Chronbach. The outcomes showed an excessive stage of reliability, with a complete alpha of total crown again for all objects. This fee reflects the suitability of the device to degree customers' perceptions in this context, which exceeds the recommended region 0.70 proposed by using Nunnali and Berntestein (1994).

Table 1: Comparative Cronbach's Alpha Values for Al-Madar

Service Quality Dimensions	Al-Madar
Tangibility	0.8013
Reliability	0.7762
assurance	0.7532
Responsiveness	0.7557
Empathy	0.7629
Sum Cronbach's Alpha	0.9013
Average Alpha	90%

In addition, photographs were taken during the data collection process for customer participation and engagement, which served as a support certificate for work field organized in the real service environment.

Figure 1: Photo of customer during the completion of the questionnaire in the service center.

Results and Discussion

This section presents the findings obtained from the demographic analysis of al-Madar customers. It is necessary to understand the characteristics of users to explain the variation in service quality perception, customers' satisfaction and the trend of behavior. Table 2 illustrates the demographic profile

of customers in the main variables including gender, age group, educational qualification, monthly income and frequency of visits at customer service centers. The analysis of these demographics provides valuable insight into the specific customer base in the center and helps identify patterns related to service use and potential brand loyalty. This profile provides a basis for sharing the market and tailoring services to meet the needs of specific customer groups. It also supports a better understanding of how demographic factor Al-Madar customers can affect the general perception of the quality of the service in the segment.

Table 2: Distribution of Respondents by Demographic Variable

Variable		Total	Percentage
Gender	Male	44	30%
	Female	108	70%
Age	18-25	25	16%
	26-35	31	20%
	36-45	34	23%
	46-55	38	25%
	56-65	24	16%
The academic qualification	Basic education	6	4%
	Preparatory	15	10%
	Secondary	33	22%
	Professional diploma	32	21%
	Higher diploma	28	18%
	Baccalaureus	31	20%
	Master's diploma/Doctorate	7	5%
Monthly Income	500-1000	21	14%
	1000-1500	23	15%
	1500-2000	31	21%
	2000-2500	52	34%
	2500 or more	25	16%
No. of visits	The first	37	24%
	The second	26	17%
	The third	28	18%
	The fourth	17	12%
	More than 4 visits	44	29%

The demographic profile of the respondents to service centers indicates an overweight of male customers (70%) and a concentration in the working age group, especially between 35-44 years. Most users have a bachelor's degree and report monthly income from 2000 to 2500. In particular, a significant portion (29%) repeats visitors, which reflects relatively stable customer base and potential brand loyalty. This section examines customer perceptions of service quality in customer service centers in Al-Madar using the SEROQUEL model. The analysis focuses on five main dimensions - to evaluate regions to evaluate adjacent, reliability, Responsiveness, insurance and Empathy - to evaluate the general performance and improve the user.

Table 3 presents the mean score for dimensions of service quality to Al-Madar Customer Service Center based on the Servqual model. In five dimensions, Assurance recorded the highest average ranking, scoring goods 4.26 as "staff have sufficient knowledge ", and "I feel safe during transaction" points 4.22, indicating strong customer confidence and trust in employees. Tangibles also get high scores, including 4.26 for the comfort of the service lounges and 4.22 for the presence of employees, reflecting the positive perception of the physical environment in the center.

Conversely, the reliability showed a slightly lower assessment, especially with timeliness of the service of 3.65, although "staff can be relied up on " still scored a solid 4.05. Responsiveness dimensions had mixed results, "staff provide quick service" " 3.84 scoring, and "Staff is ready to meet the requirements" that scores 4.07, suggesting a certain inconsistency at speed and attentiveness.

Table 3: Mean Scores of Service Quality Dimensions for Customer Service Center

Dimensions		Mean Score
Tangibles	The staff at the headquarters are elegant and have a good appearance	4.22
	Lounges and lounges for the required service are relaxed for customer interaction with employees.	4.26
	Lounges and lounges for the required service are relaxed for customer interaction with employees	4.20
	Materials and information related to the Service (promotional brochure advertisements, billboards or advertising screens) are displayed in a visually attractive - manner at the customer service desk.	3.80
Reliability	The employees of the headquarters are committed to providing services with the time they have promised	3.65
	Headquarters staff continue to keep their customer records (invoices, data) accurately.	3.87
	When I have problems, my headquarters cosidiners are empatheticand reassuring	3.98
	The staff of the headquarters can be relied upon	4.05
Assurance	I feel safe when making transactions (e.g. payments, inquiries) with headquarters staff.	4.22
	The staff at the headquarters are constantly polite. Headquarters employees instill confidence in their customers.	4.17
	The staff at the headquarters are constantly polite	4.20
	Headquarters staff have sufficient knowledge to respond to customer inquiries.	4.26
Responsiveness	I receive a quick and immediate service from the staff within the headquarters.	3.84
	The headquarters staff do not seem to be too busy responding to customers.	3.75
	The staff at the headquarters have human characteristics that are supportive, practical and kind.	4.01
	Employees at this headquarters tell the customer exact I when the services will be implemented	4.00
	The people working at this headquarters are ready to meet all our requirements.	4.07
Empathy	The current working hours are suitable for all customers.	3.82
	The staff at the headquarters prioritises my interest.	3.93
	The staff at headquarters gives individual attention to each customer.	3.94
	he headquarters staff know what I really want.	4.26

Empathy achieved a medium ranking overall; "the staff knows what I really wanted" was the highest rate of 4.26, while the working time scored the lowest of 3.82. These findings in Table 3 show that Al-Madar performs greatly in insurance and physical service presentation, reliability and responsiveness can be improved to further improve the general customer experience. As shown in Table 4, Al-Madar shows strong total service quality in five Sevrel dimensions.

Table 4: Service Quality Evaluation of Al-Madar Across the Five SERVQUAL Dimensions

Quality dimensions	Mean	Standard deviation
Tangibility	4.12	0.78
Reliability	3.89	0.82
Assurance	3.12	0.72
responsiveness	4.91	0.96
Empathy	3.99	0.80
total	4.006	0.816

The company was especially given high rating in Tangibility (4.12) and Responsiveness (4.91), which reflects the physical functions of the customers and positive perceptions of fast service. Al-Madar also performed well in Empathy (3.99) and reliability (3.89), indicating a good level of personal care and reliable service. Although Assurance score was relatively low (3.12), the company has still achieved the highest total average score (4.006). Analysis of the demographic variations in carrier for Al-Madar shows that gender differences had been minimal and statistically insignificant throughout all dimensions. Age emerged as a top-notch factor, with respondents aged 56–65 continuously reporting better satisfaction, in particular in tangibles and assurance ($p < 0.05$). Educational heritage additionally prompted perceptions, as participants with basic education scored maximum in empathy and total quality, with responsiveness displaying a statistically significant variation ($p = 0.028$). income and frequency of visits s did now not produce extensive variations; however, better ratings had been located among respondents' incomes 2,000–2,500 LYD and those touring more than four instances, specifically in tangibles and assurance. These findings advise that focused enhancements in service transport could be simplest when considering age and education segments.

Conclusion

This study evaluated the quality of service using al-Madar tangibles, reliability, responsiveness, assurance, and empathy, as well as demographic factors such as gender, age, education, income and visit frequency. Conclusions indicate that al-Madar achieved its strongest performance in responsiveness, empathy, and tangibles, which reflect the customers' high confidence in employees, stability in service distribution and quality of physical facilities. These results are consistent with [17,18]. who emphasizes that responsiveness, empathy, are important to build trust and long -term loyalty. In addition, the superior touches are in accordance with the tangibility score of [19] which highlights the importance of modern, well -equipped service environment in the design of customers' perceptions.

Despite these strengths, analysis suggests that responsibility and sympathy are areas where al-Supervision and improvement can be made. Increasing service speed and increasing individual customer engagement can lead to more balanced service profiles, which supported by [3], which emphasizes that vigilance and fast service affect customers' satisfaction with oriented industries. Demographic analysis has shown that older customers (55-65 years) and people with basic education reported the level of the highest satisfaction in most dimensions, especially in tangibles and assurance. This discovery suggests that the strength of al-Madar is well resonate with customer groups that affect the quality of professionalism, stability and service environment. The geographical attention of the study at Benghazi and addiction to a cross -sectional design can limit normalization. The geographical attention to the study at Benghazi and addiction to a cross -individual design can limit the generality of the results. Future research should include several service centers in Libya and use a longitudinal approach to capture changes over time. In addition, with increasing changes to digital service channels, checks the quality of digital service-inclined mobiles and online platforms, you will provide valuable insight into how to create and increase customers' satisfaction in the telecommunications brand that quickly developed.

References

[1] International Telecommunication Union. (2022). World Telecommunication Development Conference 2022 (WTDC-22): Final report: Connecting the unconnected to achieve sustainable development.

[2] Arokiasamy, A. R. A., & Abdullah, A. G. K. (2013). The influence of HR practices on the job satisfaction of university staff in Malaysia. Asian Social Science, 9(10), 120–131..

[3] Zeithaml, V. A. (1988). Consumer perceptions of price, quality, and value: A means–end model and synthesis of evidence. Journal of Marketing, 52(3), 2–22.

[4] Parasuraman, A., Zeithaml, V. A., & Berry, L. L. (1985). A conceptual model of service quality and its implications for future research. Journal of Marketing, 49(4), 41–50.

[5] Zaitun, M. S. (2006). Customer satisfaction and loyalty in the service sector: An empirical study. Journal of Marketing Research, 12(3), 45–57

[6] Arokiasamy, A. R. A., Ismail, M., Ahmad, A., & Othman, J. (2013). The impact of organizational commitment on job performance: A study in the Malaysian higher education sector. International Journal of Human Resource Studies, 3(2), 1–16

[7] Agyapong, G. K. (2011). The effect of service quality on customer satisfaction in the utility industry – A case of Vodafone (Ghana). International Journal of Business and Management, 6(5), 203–210

[8] Rehman, A. (2012). Customer satisfaction and service quality in Islamic banking. Qualitative Research in Financial Markets, 4(2/3), 165–175.

[9] Rai, A. K., & Medha, S. (2013). The antecedents of customer loyalty: An empirical investigation in life insurance context. Journal of Competitiveness, 5(2), 139–163.

[10] Ladhari, R. (2009). A review of twenty years of SERVQUAL research. International Journal of Quality and Service Sciences, 1(2), 172–198.

[11] Fasih, M. (2014). Impact of service quality on customer satisfaction and customer loyalty: Evidence from banking sector. Journal of Applied Economics and Business Research, 4(3), 121139.

[12] Freedom House. (2018). *Freedom on the Net 2018: The rise of digital authoritarianism*. Freedom House.

[13] Freedom House. (2019). *Freedom on the Net 2019: Country report—Libya. Freedom House.

[14] Frąckiewicz, M. (2025, February 16). *Internet Access in Libya: A comprehensive overview. TS2 Space. Retrieved from https://ts2.tech/en/blog/page/165

[15] British Libyan Business Association. (2023, October 23). Libya's telecom revolution: Charting a digital renaissance in North Africa. British Libyan Business Association.

[16] Yamane, T. (1967). Statistics: An introductory analysis (2nd ed.). New York: Harper & Row.

[17] Zeithaml, V. A., Berry, L. L., & Parasuraman, A. (1990). Delivering quality service: Balancing customer perceptions and expectations. New York: Free Press.

[18] Schneider, B., White, S. S., & Paul, M. C. (2020). Linking service climate and customer perceptions of service quality: Tests of a causal model. Journal of Applied Psychology, 83(2), 150-163.

[19] Azzopardi, E., & Nash, R. (2016). A framework for island destination competitiveness – Perspectives from the island of Malta. Current Issues in Tourism, 19(3), 253–281.