

# Comparative Analysis of Service Quality and Customer Satisfaction in Libyan Telecommunications

Duaa S. A. Awadh\*, Haneen J. Elburki and Mohammed M. Algmati

*Department of Industrial and Manufacturing Systems Engineering, Faculty of Engineering, Benghazi, Libya.*

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## Abstract

This research examines perceived service quality of two telecommunications companies, Al-madar and Al-fewhat, as well as the demographic characteristics of their customers, in order to understand customer base, service effectiveness and satisfaction. The study includes a sample of 302 participants, which has a detailed analysis of gender, age, educational qualification, monthly income and frequency of visits. Demographic data suggests that Al-fewhat has a balanced gender distribution and a high educational qualification among its customers, while Al-madar has a more loyal customer base with high visiting rates.

In terms of service quality, Al-madar consistently performs better than Al-fewhat in all dimensions. Al-madar customers report high satisfaction with the physical environment, the reliability of services, the staff's ability to meet their requirements with confidence, and understanding of customer needs and overall empathy shown by employees. Al-fewhat falls behind in attracting new customers, as well as converting them into repeated visitors, indicating areas to improve service distribution and customer engagement.

With the goal to meet customer expectations and improve satisfaction, this study highlights the significance of consistent service strategies. Al-madar's ability to retain its customers by providing high service quality functions as an example for enhancing its services. The outcomes highlight the significance of continuous practice monitoring and development in order to maintain long customer relationships and accomplish continuous business development.

**Keywords:** Customer Satisfaction; Libya; Service Quality; SERVIQUAL Model Telecommunications

## 1. Introduction

The telecom sector is characterized by rapid technical advancement and competition, which requires a strong focus on service quality to ensure customer satisfaction and retention [1]. Understanding and managing customer perceptions of service quality is essential to maintaining a competitiveness and enhancing long-lasting loyalty in such an environment of rapid change[2]. Since unsatisfied consumers are likely to transfer providers, resulting in revenue loss and a decline in market share, customer satisfaction is specifically a significant factor of commercial success within this business [3][4]. In order to gain a better understanding of the areas that need improvement, this study compares the quality of service and its direct impact on customer satisfaction in the service centers of communication firms in Benghazi, Libya. This study uses a robust analytical framework to pinpoint the particular aspects of service quality that have the most impacts on customer satisfaction, while offering practical suggestions for local telecom providers. The need to consider customers' expectations and perceptions of service distribution is highlighted by rising competition. The purpose of this comparative analysis is to clarify the current status of the quality of service within the

\* Corresponding author: Duaa S. A. Awadh

telecommunications of Libya, which is to identify the major areas of weakness and strength through the lens of customer experiences.

A widely recognized instrument, SERVIQUAL model, is adapted to this study to assess key service quality dimensions by offering assessment of customer perceptions and pinpointing areas for service improvements[5][6]. This study critically examines how the reference to Libya -within the tangibility, reliability, responsiveness, assurance, and empathy affects the overall customer satisfaction in the five dimensions and telecommunications service centers, providing a fine understanding of the service provision. Analysis of demographic variables, such as age, gender and income, Benghazi telecommunications will further refine the understanding of various customers' needs and preferences within the market. This broader approach will enable the service providers of target strategies to increase the quality of service, eventually Libya will lead to high customer satisfaction and better competitive status for telecom companies in Libya.

## 2. Material and methods

The purpose of this research is the evaluation the service quality offered by customer service centers by two major Libyan telecommunications companies, A sample of 302 customers participated in the study, with 152 replies from Al-madar and 150 from Al-fewhat through the administration of the questionnaire. This quantitative approach allows for systematic collection of data on customer perceptions about various service quality dimensions, facilitates a strong comparative analysis between the two providers. The sample size was estimated using a simplified formula for the ratio given by [7], suitable for conditions in which the total population is large or unknown. A conservative assumption was made by the population size was considered large based on the official record of daily customer visits

The questionnaire was distributed in two periods- (9:00 am to 1:00 pm) and (4:00 pm to 6:00 pm) - between May and June 2024. This careful approach to the questionnaire development ensured that the data collected correctly reflected customer perceptions within the specific service center environment [8][9].

The reliability of the questionnaire for both centers was evaluated using the Cronbach's Alpha. The Cronbach's Alpha of 0.70 or more is usually considered an acceptable range for internal stability [10] The results for each company are presented in Table 1 below.

**Table 1** Comparative Cronbach's Alpha Values

Service Quality Dimensions	Al-madar	Al-fewhat
Tangibility	0.8013	0.6032
Reliability	0.7762	0.8072
Security	0.7532	0.8068
Responsiveness	0.7557	0.8133
Empathy	0.7629	0.8289
Sum Cronbach's Alpha	0.9013	0.8808
Average Alpha	90%	88%

From Cronbach's Alpha results in Table 1, it is clear that both companies demonstrated strong internal stability in most service quality dimensions. Al-madar acquired alpha of a total of 0.9013, while Al-fewhat closely followed with a score of 0.8808. This suggests that the two questionnaires provided reliable results, although some dimensions, such as tangibility for Al-fewhat, recorded a minimum of 0.6032 at the least an alpha value of 0.6032, below the acceptable threshold of 0.70. This implies that possible issues with the tangibility aspect of the questionnaire used in the centers of Al-fewhat. Despite this, the overall high Cronbach's Alpha values for both companies usually indicate strong and reliable measurement equipment for the majority of service quality dimensions.

## 3. Results and discussion

The section provides a comparative analysis of the quality of service between two telecom providers. Five key dimensions—Tangibility, Reliability, Responsiveness, Assurance, and Empathy—are examined using SERVQUAL

models. Additionally, it examines how demographic factors affect customer satisfaction and draws emphasis to performance differences. In addition to comparing the average score and statistical significance of the differences between two telecom providers, this section will introduce the conclusions for each dimension and examine how these demographic factors can explain differentiation in terms of perceived service quality

A comparison of the customers demographic factors for two communication service providers was displayed in Table 2. The comparison is predicated on a variety of important factors, such as gender, age, level of education, monthly income, and frequency of visits. Knowing the demographics of these customers offers important information about each provider's customers; the user draws attention to the variations in profiles and loyal patterns. The data highlights which groups are more likely to choose one provider on another, which provides useful information for market partitions and targeted services.

**Table 2** Demographic Comparison Between Al-madar and Al-fewhat

Variable		Total		percentage	
		Al-madar	Al-fewhat	Al-madar	Al-fewhat
<b>Gender</b>	Female	44	73	30%	49%
	Male	108	77	70%	51%
<b>Age</b>	18-25	25	30	16%	20%
	25-35	31	25	20%	17%
	35-45	34	35	23%	23%
	45-55	38	44	25%	29%
	55-65	24	16	16%	11%
<b>The academic qualification</b>	Basic education	6	3	4%	2%
	Preparatory	15	12	10%	8%
	Secondary	33	32	22%	22%
	Professional diploma	32	18	21%	12%
	Higher diploma	28	30	18%	20%
	Baccalaureus diploma/Doctorate	31	47	20%	31%
<b>Monthly Income</b>	500-1000	21	27	14%	18%
	1000-1500	23	33	15%	22%
	1500-2000	31	24	21%	16%
	2000-2500	52	29	34%	19%
	2500 or more	25	37	16%	25%
<b>Number of visits</b>	The first	37	92	24%	61%
	The second	26	28	17%	19%
	The third	28	16	18%	11%
	The fourth	17	6	12%	4%
	More than 4	44	8	29%	5%

Both companies serve well-educated, medium-income users within the age of 25–55, with the highest representation in the 45–55 group. However, there are notable differences between the two providers. The Al-madar customer base is primarily a male (70% male vs. 30% female), while Al-fewhat displays a more balanced gender distribution (51% male and 49% female). In terms of education, Al-fewhat report the largest stake of users holding a Baccalaureus Master's degree (31% each); However, Al-fewhat attracts a slightly lower ratio of Professional diploma degree users (12%). Regarding income, the largest customer segment of Al-madar falls within the (2000-2500) range (34%), while the Al-fewhat focuses in the (2500 or more)Lyd range (25%). Regarding customer loyalty, Al-madar records a large ratio of repeated visitors (29%)with more than four visits, while Al-fewhat first shows a strong influx of users (61%). Overall,

while the two providers meet the same socio-genitus segments, Al-madar male and loyal customers appeal more, while Al-fewhat maintains gender balance and attracts new users.

As presented in Table 3, comparing the quality of service in five dimensions indicates a remarkable difference between the two centers. Compared to Al-madar Al-fewhat ( $M = 3.31$ ,  $SD = 0.61$ ), it displays a significant advantage in competition. In Tangibility ( $M = 4.12$ ,  $SD = 0.78$ ), suggests that customers consider its physical features and equipment better. Similarly, in Reliability, Al-madar reported a high score ( $M = 3.89$ ) compared to Al-fewhat ( $M = 3.50$ ), which reflects strong dependence in service distribution. In the same manner Al-fewhat has higher score in assurance ( $M = 4.12$  vs.  $3.63$ ), indicating that its users experience more confidence and faith in the services of the company.

In relation to responsiveness, both providers receive relatively high evaluation; However, Al-madar goes with an average score of 4.91 compared to 4.44 of Al-fewhat, which highlights strong responsiveness to customers' needs. A similar pattern emerges in empathy, where Al-madar receives a slightly higher score ( $M = 3.99$ ), which suggests more favorable perception of personal care and customer aid.

Overall, the Al-madar obtains a high total average score of 4.006 compared to the 3.716 of Al-fewhat, which outlines its better service quality. Nevertheless, the Al-fewhat records a low standard deviation (0.732 vs. 0.816), which reflects more consistent service experiences between its users, even if the quality of average service is low.

**Table 3** Service Quality Comparison Between Al-madar and Al-fewhat

Quality Dimensions	Mean		Standard Deviation	
	Al-madar	Al-fewhat	Al-madar	Al-fewhat
Tangibility	4.12	3.31	0.78	0.61
Reliability	3.89	3.50	0.82	0.74
Assurance	4.12	3.63	0.72	0.70
Responsiveness	4.91	4.44	0.96	0.83
Empathy	3.99	3.70	0.80	0.78
Overall average	4.006	3.716	0.816	0.732

This section provides intensive comparison of the service quality dimensions between the two serves providers, depending on the SERVQUAL model, as presentenced in table 4. Five dimensions - dimensions (Tangibility, Reliability, Responsiveness, Assurance, and Empathy) - are evaluated to identify major differences in service performance.

Comparative analysis highlights the level of customer perceptions and satisfaction for each company, highlighting the strength and weaknesses of their service distribution.

In the Tangibility dimension, Al-madar achieved higher score regarsing the employees' professional appearance ( $M = 4.22$  vs.  $3.56$ ), service lounge comfort and rest ( $M = 4.26$  and  $4.20$  vs.  $3.37$  and  $3.25$ ), and specially high scores in visual appeal of promotional materials ( $M = 3.80$  vs.  $3.06$ ). These findings indicate that the customers consider Al-madar as a more professional staff image, a more welcoming service environment, and the offering of better-designed communication materials, which strengthen its overall power in the tangibility.

In the reliability dimension, Al-madar also record a higher in all assessed items. Customers made high evaluation for service distribution within the promised time ( $M = 3.65$  vs.  $3.42$ ), accuracy in maintaining customer records ( $M = 3.87$  vs.  $3.50$ ), sympathy and assurance during problem solution ( $M = 3.98$  vs.  $3.50$ ), and overall dependence ( $M = 4.05$  vs.  $3.56$ ). These results suggest that the services of Al-madar are considered more timely restricted, accurate and reliable, while also provides more emotional support during problems.

Regarding the assurance, Al-madar once again recorded high average scores in all indicators. Customers have more security in transactions ( $M = 4.22$  vs.  $3.56$ ), more humble staff interaction ( $M = 4.20$  vs.  $3.72$ ), strong confidence by employees ( $M = 4.17$  vs.  $3.46$ ), and high employee knowledge ( $M = 4.26$  vs.  $3.77$ ). Collectively, these conclusions highlight the ability of Al-madar which promote more and more beliefs, professionalism and ability than Al-fewhat.

In the context of responsiveness, Al-madar has accelerated and urgent service ( $M = 3.84$  vs.  $3.60$ ), availability of employees ( $M = 3.75$  vs.  $3.48$ ), interpersonal characteristics such as kindness and supportive behavior ( $M = 4.01$  vs.  $3.52$ ), service implementation time ( $M = 4.00$  VS  $3.59$ ) meet the requirements ( $M = 4.00$  VS  $3.59$ ). These findings suggest that Al-madar employees are more vigilant, acceptable and efficient in addressing customers requests.

Finally, in the empathy dimension, Al-madar also outperform Al-fewhat. Customers reported more satisfaction with suitability of working hours ( $M = 3.82$  vs.  $3.60$ ), priority of employees of customer interest ( $M = 3.93$  vs.  $3.64$ ), personal attention ( $M = 3.94$  vs.  $3.62$ ), and understanding of customer needs ( $M = 4.26$  vs  $3.93$ ). These results strengthen the strong orientation of Al-madar towards customer-focused service distribution.

**Table 4** Detailed Comparison of all 5 dimensions Between Al-madar and Al-fewhat

Service Quality Dimensions		Mean Score(Al-madar)	Mean score (Al-fewhat)
Tangibles	The staff at the headquarters are elegant and have a good appearance	4.22	3.56
	Physical layout of equipment and furniture are comfortable for customer interacting with staff.	4.26	3.37
	Waiting areas and lounges for the required service s well-equipped with up-to-date facilities	4.20	3.25
	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	3.06
Reliability	The staff are committed to providing services with the time they have promised	3.65	3.42
	The staff continue to keep their customer records (invoices, data) accurately.	3.87	3.50
	When I face problems, the service provider staff is sympathetic and reassuring.	3.98	3.50
	The service provider staff is dependable can be relied upon.	4.05	3.56
Assurance	I feel safe when making transactions (e.g. payments, inquiries) with headquarters staff.	4.22	3.56
	The staff employees instill confidence in their customers.	4.17	3.72
	The staff at the headquarters are constantly polite	4.20	3.46
	The staff have sufficient knowledge to respond to customer inquiries.	4.26	3.77
Responsiveness	I receive a quick and immediate service from the staff	3.84	3.60
	The headquarters staff do not seem to be too busy responding to customers.	3.75	3.48
	The staff at the headquarters have human characteristics that are supportive, practical and kind.	4.01	3.52
	The staff tell the customer exactly when the services will be implemented	4.00	3.59
	The staff are ready to meet all our requirements.	4.07	3.58
Empathy	The current working hours are suitable for all customers.	3.82	3.60
	The staff at the prioritises my interest.	3.93	3.64

	The staff gives individual attention to each customer.	3.94	3.62
	The staff know what I really want.	4.26	3.93

Further analysis to find out whether demographic features affect the quality of service, independent sample t-tests and the perceptions of one-way ANOVA tests, which were held in five service dimensions (Tangibility, Reliability, Responsiveness, Assurance, and Empathy). The analysis considered the gender, age, academic education, monthly income, and number of visits as independent variables. Statistically significant differences were identified where P-value was below 0.05.

In relation to the gender, the result was detected by the opposite pattern between the two companies. In the Al-fewhat, male reported high average scores in most dimensions, with a statistically significant difference in tangibility ( $P < 0.001$ ). In contrast, in Al-madar, female were given high status in tangibility, reliability and assurance, but none of these differences reached statistical importance ( $p > 0.05$ ). This suggests that the gender within the Al-fewhat plays a more impressive role in shaping the perceptions of quality, especially in relation to tangibility, while in Al-madar, service perceptions remain relatively identical in the gender.

For age, the 55–65 age group consistently reported the highest scores across dimensions in both companies, especially in reliability and assurance. However, in Al-fewhat, significant age-related differences were detected in tangibles and assurance, while in Al-madar, the differences were not statistically significant ( $p > 0.05$ ). These findings imply that age exerts a more pronounced effect on service quality perceptions in Al-Fwehat, whereas in Al-madar the effect is weaker and not statistically meaningful.

In terms of academic education, both companies exhibited a consistent pattern in which respondents with only basic education rated higher on several dimensions, particularly empathy and overall service quality. In Al-fewhat, significant differences were observed in responsiveness ( $p = 0.023$ ) and empathy ( $p = 0.015$ ), while in Al-madar, responsiveness was the only dimension showing a significant variation ( $p = 0.028$ ). This indicates that education level influences perceptions of responsiveness in both companies, but empathy is significantly affected only in Al-fewhat.

For monthly income, 1500–2000 LYD Income Group reported high average scores in most service dimensions for both companies. However, no statistical difference was found in Al-fewhat or Al-madar ( $P > 0.05$ ). This suggests that the income level, although the upper-middle income is associated with a slightly higher ratings in the bracket, does not significantly affect the perceptions of service quality.

Finally, in relation to the number of visits, the respondents with more than four trips reported high service quality scores in both Al-fewhat and Al-madar, especially in Tangibles and Assurance. However, these differences were not statistically important ( $p > 0.05$ ), showing that the frequency of visits does not have a significant impact on the service quality perceptions despite the upward trend seen in the medium score.

#### 4. Conclusion

The purpose of this research was to assess and compare service quality across two major Libyan telecommunications companies service centers, using five dimensions of the SERVQUAL model. The study additionally examined into how customers' satisfaction at these facilities is impacted by demographic factors such gender, age, educational background, monthly income, and visiting frequency. The findings had significant implications for service distribution in the Libyan telecom industry in addition to providing important insights into the various strengths and weaknesses of each company's service quality.

Comparative analysis of service quality dimensions: The findings indicated, Al-madar typically scored highly in all categories. Customers of Al-madar showed increasing confidence in the competence and professionalism of service personnel, indicating excellent results in these areas. It is consistent with studies that indicates that in service industries, customer assurance and reliability are essential for developing loyalty and trust. [11][12]. Al-fewhat, on the other hand, shown greater empathy and responsiveness, particularly for younger customers and first-time customers, suggesting a more individualized and customer-focused strategy. According to [13] responsiveness and empathy are crucial for delivering satisfying customer experiences, particularly in the dynamic and consumer-inactive telecommunications industry.

#### 4.1. Dimensions between Al-madar and Al-fewhat:

- **Tangibles:** Al-madar's strong competition score is a result of its service centers' improved physical surroundings, state-of-the-art equipment and infrastructure. The finding supports the findings of [14], who emphasize the significance of concrete components in influencing how customers view the quality of services. Enhancing customer satisfaction requires a well-designed, cozy, and contemporary space [15].
- **Assurance:** Al-madar's high assurance score means that customers have more belief in the capacity of staff to facilitate and handle service concerns. Customers and older generations, who place a high value on ability and professional performance in service encounters, need assurance the most. This is comparable to a study by [16], which shows that the two most important factors influencing customer satisfaction in service sectors are availability and perceived professionalism.
- **Reliability:** Al-madar's exceptional reliability demonstrates that its services are reliable and constant, which is a crucial component of contented customers. Al-madar's customers reported that the business fulfilled its commitments, which increased their level of trust in it overall. These findings are consistent with results reported in [11].
- **Responsiveness:** Al-madar's received excellent review for responsiveness, particularly from younger customers, which reflects quicker and more active service delivery. Maintaining customer satisfaction requires responsiveness, which includes service staff's willingness to assist customers and offer prompt services, particularly in sectors where convenience and speed are crucial. The findings of [17], who contend that prompt service is a key factor in determining overall satisfaction, confirm this conclusion.
- **Empathy:** Al-madar's also demonstrated a high empathetic score, indicating that customers were more cautious and that staff members understood them. Empathy has a significant role in customer satisfaction, particularly for customers or clients with particular needs. By attending to individual wants and preferences, the empathy service fosters positive customer connections [18][19].

#### 4.2. Limitations and Future Directions

Despite the valuable insight obtained from this study, many boundaries should be noted. First, focusing on the size of a relatively small sample and a specific geographical area (Benghazi, Libya) can limit the generality of findings. Future research must expand the scope of study to involve more service centers in other cities with Libya, or other countries with similar telecommunications to verify mass results.

Second, the study depended on a cross-sectional survey design, which at one time occupied the customer perceptions. A longitudinal study would be beneficial to understand how customers change the assumptions of satisfaction and service over time, especially in response to efforts by service centers to improve their offerings

#### *Recommendations:*

- **For Al-madar:** The company should maintain its strength in responsiveness, tangibility, and assurance focusing on improving empathy and reliability. Given that many customers are satisfied with the capacity of the employees, the next step is that the customer conversation is extended by training employees in soft skills, such as active hearing and personal customer service. Additionally, reducing waiting time and improving the speed of service distribution can further increase customers' satisfaction.
- **For Al-fewhat:** While Al-fewhat excel in responsiveness and empathy, the company should focus on improving reliability and tangibility. Investing in training of employees to promote technical capacity and ensure that services are continuously distributed, as it was promised that a strong customer would help create trusts. Additionally, upgrade physical features and ensure that service centers are modern and comfortable, may address a less tangible score
- **Future studies:** Future research can find out that digital changes including online and integration of mobile services affect customers' satisfaction in telecom service centers. Since more customers use digital platforms for service requests and troubleshooting, it will be necessary for telecommunications providers to understand the quality of digital service.

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#### **Compliance with ethical standards**

##### *Disclosure of conflict of interest*

No conflict of interest to be disclosed.

### *Statement of informed consent*

Informed consent was obtained from all individual participants included in the study.

### *Statement of ethical approval*

Ethical approval was not required for this study as it involved anonymous survey data and did not include any clinical or experimental procedures

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