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Examination of Service Quality Dimensions in Power Distribution Sector

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Abstract— Service quality has become a crucial parameter for determining the success of the service company in the market. Any servicing company can survive in this competitive world only if it fulfills all the customer expectations. Their customers' satisfaction level significantly impacts the monetary gains of the company. All these are dependent on their quality of services offered in terms of different service attributes. Tangibility, reliability, responsiveness, empathy and assurance are important attributes of the services, on which company has to perform well to satisfy the customers' needs. Providing good service quality on all these service attributes is equally important in power sector also. Power distribution companies generally could not fulfill the needs and expectations of their customers, as observed in this study. Mean score of customers' expectations and perceptions have large difference corresponding to each attribute of the services offered. The findings of this study showed the poor performance of power distribution companies on all parameters of service quality according to SERVQUAL model.

Keywords- *SERVQUAL model; power sector; gap*

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I. INTRODUCTION

Today, many service companies are struggling with the problem of low customer satisfaction owing to their poor service quality [1-4]. Consequently, these companies are grappling with large losses [7-10]. One of the major service industries is power distribution sector which is striving for growth and development [22-27]. Lot of research is being carried out over the analysis of power quality offered to the electricity customers [28-41]. As a result, several designs and models are designed to measure the quality of service and relationship of quality with the most important parameter of service industry, i.e., customer satisfaction. These models are helpful for management by providing the strategies to improve their services and take step for strengthening their relationship with the customers [5-6]. They facilitate with required information to maintain evenness in service quality. The customers are assured that they are protected. There are few symptoms available to show the relationship between company performance and service quality. According to Buzzell and Gale 1987, higher quality and market share are linked with customer's satisfaction level data.

Many researchers have defined service quality in different ways. Reeves and Bednar has defined it as excellence value and completing customer requirements [3]. There is a difference between the customer need and provided services. Many services differ from required service, low quality of service, improves the dissatisfaction. When a company starts, it promises the customer to provide their best and to fulfill their all needs. A SERVQUAL model it produced by Parasuraman, Zeithaml and Berry, to know more about service quality [11]. It finds the gap, so it is also known as GAP model. SERVQUAL model is liked by all the researchers and it is a wonderful way of measuring service quality.

SERVQUAL model has five features but now these are increased to ten dimensions. Their names are tangibility, responsiveness, reliability, communication, empathy, accessibility, credibility, assurance, courtesy and security. It is a multi-dimensional research instrument, designed to capture consumer expectation and perception of a service.

II. LITERATURE REVIEW

The distinction and association between service quality and customer satisfaction are always in debate in marketing literature, according to many practitioners as Spreng, Harrell, and Mackoy [15-21]. A customer can be considered satisfied when his/ her expectations and perceptions are fulfilled through the purchase. In the favour of customer expectation and service performance, Parasuraman, Zeithaml and Berry have given 20 attributes into 5 dimensions. Quality and satisfaction both definitions are concerned the same most of the time. Researchers also taken the quality and customer satisfaction together. Studies described that the customer satisfaction and service quality are different concept and temporally connected.

Service quality can be defined as long term attitude while satisfaction is a short term evaluation [11], service experience can produce an emotional reaction. A firm which is providing services to its customer, it tries to give high quality services and a customer concludes that if he/she is satisfied or not [12]. After many studies of service, it has been decided by the researchers that the two constructs are different. If the quality is good then the customer will be satisfied and customer service is connected with the measurement of quality. All the authors have their views towards the measurement of customer satisfaction. Cronin and Taylor have tested a simple relationship between service quality and customer satisfaction and concluded that a good quality gives satisfaction.

The 20 items of SERVQUAL were measured as the test predictors of satisfaction [13]. If an organization is serious towards service quality then it can help it to grow more than other organizations and it can be profitable for the firm [14]. A customer is very keen towards the purchase of any items. The quality of the items attracts customers. The most important element to satisfy a customer is only the quality of the service. It has been observed in power sector services also.

III. RESEARCH METHODOLOGY

In this paper, we used descriptive design. The prime data of the research was collected by the organized questionnaire. We measured the customer expectation and perception with the 5 point Likert's scale. We gave the ranking from "highly agree"

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to "highly disagree". In this survey, we took 200 sample size from NCR region with suitability of sampling. In this we covered the primary data from residential, commercial and industrial, and secondary data was related with the earlier literature, books, magazines and journals.

IV. FINDINGS AND DISCUSSIONS

In the Table 1, we analyze the service quality's mean gap of perception and expectation. In this, we find the mean gap of all the dimensions' statement. In the Figure 1, we observe that in the term of perception tangibility that has highest mean. It shows that customer makes highest perception for the office structure, their work and their appearance. They are most satisfied with their appearance. Assurance has second highest term of perception. In this they are satisfied with the organization's work and on their assurance. The term has lowest mean gap that show customers are not satisfied with the empathy of the organization. Organization does not give personal attention to the customer and they don't attend the customer individually. So, customers are not satisfied with these aspects.

In Figure 2, it shows the expectation of the consumer. In this, tangibility, assurance and responsiveness have highest mean which shows that customers has highly expectation to the organization's appearance, its responsibility and its assurance for their services.

Figure 3 shows the mean gap of customer's expectation and perception. From this table, we find that reliability has the highest mean gap. It means customers are highly dissatisfied with this dimension of the service quality. Customers are not satisfied with the Organization's reliability. Organization does not fulfill their promises. There is a lot of difference between the customer's expectation and perception for the services. Empathy has the second highest mean gap. That shows organization is enable to give personal attention to the customer.so customer do not get proper information. So, customers are not satisfied with its service. Tangibility has the lowest mean gap than the others dimensions. So, it shows that customers are satisfied with the tangibility term of service quality. They get good appearance of the office, proper management and good technology.

In Table 3, we define the mean gap of perception and expectation of the customer. in this all the dimensions of the service quality are negative which shows that customer are dissatisfied with the service quality. In this tangibility has -0.4029 mean gap, reliability has -0.4375 mean gap, responsiveness has -0.26162, assurance has -0.24016 and empathy has -0.3987 mean gap. In the reliability and empathy have highest mean gap. Its shows customers are not highly satisfied with these dimensions. Tangibility has the lowest mean gap. Because of lowest mean gap, customers are highly satisfied with this dimension.

V. CONCLUSION

With this study, we find that there is highest mean gap in the reliability and empathy dimension of the service quality. The power companies have to decrease the mean gap so that customers are more satisfied with the service quality. They have to give personal and individual attention to the customer and understand their need. Reliability of an organization is most important factor of the company. If customers are satisfied with the reliability of a company then there is a minimum gap between consumer's expectation and perception.

So, if power sector improves their services then customers are most satisfied with the power companies.

REFERENCES

[1] R. Singh, Satpal and S. Saini, "Power Sector Development in Haryana," International Journal of Science, Technology and Management, vol. 5, no. 3, pp. 278-285, 2016.

[2] S. Saini, "Evolution of Indian Power Sector at a Glance," National Journal of multidisciplinary research and management, vol. 3, no. 1, pp. 275-278, 2018.

[3] C. A. Reeves and D. A. Bednar, "Defining Quality: Alternatives and Implications," The Academy of Management Review, vol. 19, no. 3, pp. 419-445, 1994.

[4] S. Saini, "Rationale behind developing awareness among electricity consumers", International Journal of Research in Engineering Application & Management, vol. 3, no. 11, pp. 1-5, 2018.

[5] S. Satapathy, "An analysis for service quality enhancement in electricity utility sector of India by SEM," Benchmarking: An International Journal, vol. 21, no. 6, pp. 964 – 986, 2014.

[6] VA Zeithaml et al., Service Marketing: Integrating Customer Focus Across The Firm (6th ed.). McGraw-Hill Education, New York. 2013.

[7] S. Saini, "Social and behavioral aspects of electricity theft: An explorative review," International Journal of Research in Economics and Social Sciences, vol. 7, no. 6, pp. 26-37, 2017.

[8] S. Saini, "Scenario of Distribution Losses – A Case Study From Haryana", International Journal of Research in Economics and Social Science, vol. 8, no. 1, pp. 163-175, 2018.

[9] S. Saini, "Malpractice of Electricity Theft: A major cause of distribution losses in Haryana," International Research Journal of Management and Commerce, vol. 5, no. 1, pp. 284-313, 2018.

[10] S. Saini, "Electricity Theft – A primary cause of high distribution losses in Indian State", International Research Journal of Management and Commerce, vol. 8, no. 1, pp. 163-175, 2018.

[11] A. Parasuraman, VA Zeithaml and LL Berry, "A Conceptual Model of Service Quality and Its Implications of Future Research," Journal of Marketing, vol. 49, pp. 41-50, 1985.

[12] G. E. Chodzaza and S. H. Gombachika, "Service quality, customer satisfaction and loyalty among industrial customers of a public electricity utility in Malawi," International Journal of Energy Sector Management, vol. 7, no. 2, pp. 269-282, 2013.

[13] S. Achchuthan et al., "Service Quality Dimensions of Electricity Services: Evidence from Electricity Board in Sri Lanka," Asian Social Science, vol. 10, no. 17, pp. 194-203, 2014.

[14] H. Sharma, "Modeling Customer Perceived Service Quality for Electricity Supply in South Haryana," International Journal of Business and Management Science, vol. 3, no. 1, pp. 73-91, 2010.

[15] S. Saini, "Expectancy-disconfirmation based assessment of customer Satisfaction with electric utility in Haryana," International Research Journal of Human Resources and Social Sciences, vol. 5, no. 1, pp. 320-335, 2018.

[16] S. Saini, "Service quality of electric utilities in Haryana – A comparison of south and north Haryana", International Journal of Research in Engineering Application & Management, vol. 3, no. 11, pp. 1-8, 2018.

[17] S. Saini, "Analysis of service quality of power utilities", International Journal of Research in Engineering Application & Management, vol. 3, no. 11, pp. 1-8, 2018.

[18] S. Saini, "Difference in Customer Expectations and Perceptions towards Electric Utility Company," National Journal of multidisciplinary research and management, vol. 3, no. 1, pp. 264-269, 2018.

[19] S. Saini, "Appraisal of Service Quality in Power Sector of NCR," National Journal of multidisciplinary research and management, vol. 3, no. 1, pp. 270-274, 2018.

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[20] S. Saini, R. Singh and Satpal, "Service quality assessment of utility company in Haryana using SERVQUAL model," Asian Journal of Management, vol. 9, no. 1, pp. 212-224, 2018.

[21] S. Saini, "Influence of gender on service quality perceptions", International Journal of Economics, Commerce & Business Management - A Peer Review Quarterly Journal, vol. 5, no. 1, pp. 169-179, 2018.

[22] R. K. Beniwal, A. Aggarwal, R. Saini and S. Saini, "Analysis of electricity supply in the distribution network of power sector," International Journal of Engineering Sciences & Research Technology, vol. 7, no. 2, pp. 404-411, 2018.

[23] R. Kumar, A. Aggarwal, R. K. Beniwal, Sumit, R. Paul and S. Saini, "Review of voltage management in local power generation network," International Journal of Engineering Sciences & Research Technology, vol. 7, no. 2, pp. 391-403, 2018.

[24] Sumit, R. K. Beniwal, R. Kumar, R. Paul and S. Saini, "Modelling for improved cyber security in Smart distribution system," International Journal on Future Revolution in Computer Science & Communication Engineering, vol. 4, no. 2, pp. 56-59, 2018.

[25] R. Kumar, Sumit, A. Aggarwal, R. Paul, R. Saini and S. Saini, "Complete management of smart distribution system," International Journal of Engineering Sciences & Research Technology, vol. 7, no. 2, pp. 385-390, 2018.

[26] R. K. Beniwal, A. Aggarwal, R. Saini and S. Saini, "Detection of anomalies in the quality of electricity supply," International Journal on Future Revolution in Computer Science & Communication Engineering, vol. 4, no. 2, pp. 6-10, 2018.

[27] M. K. Saini, R. Dhiman, A. N. Prasad, R. Kumar and S. Saini, "Frequency management strategies for local power generation network," International Journal on Future Revolution in Computer Science & Communication Engineering, vol. 4, no. 2, pp. 49-55, 2018.

[28] M. K. Saini, N. K. Yadav and N. Mehra, "Transient Stability Analysis of Multi machine Power System with FACT Devices using MATLAB/Simulink Environment," International Journal of Computational Engineering & Management, vol. 16, no. 1, pp. 46-50, 2013.

[29] R. Kapoor and M. K. Saini, "Detection and tracking of short duration variations of power system disturbances using modified potential function," International Journal of Electrical power & Energy Systems, vol. 47, pp. 394-401, 2013.

[30] S. Dahiya, A. Kumar, R. Kapoor and M. Kumar, "Detection and Classification of power quality events using multiwavelets,"

International Journal of Energy Technology and Policy, vol. 5, no. 6, pp. 673-683, 2007.

[31] M. K. Saini and R. K. Beniwal, "Optimum fractionally delayed wavelet design for PQ event detection and classification," International Transaction of Electrical Energy Systems, vol. 27, no. 10, pp. 1-15, 2017.

[32] M. K. Saini and K. Dhamija, "Application of Hilbert-Huang Transform in the Field of Power Quality Events Analysis," Proc. of Int. Conf. on Advances in Signal Processing and Communication, 2013.

[33] M. K. Saini, R. Kapoor and B. B. Sharma, "PQ event classification using fuzzy classifier," Advanced Materials Research, vol. 403, pp. 3854-3858, 2012.

[34] R. Kapoor, M. K. Saini and P. Pramod, "Detection of PQ events using demodulation concepts: A case study," International Journal of Nonlinear Science, vol. 13, no. 1, pp. 64-77, 2012.

[35] M. K. Saini, R. K. Beniwal and Y. Goswami, "Signal Processing Tool & Artificial Intelligence for Detection & Classification of Voltage Sag," Proceedings of the 2016 Sixth Int. Conf. on Advanced Computing and Communication Technologies, pp. 331-337, 2016.

[36] M. K. Saini, R. K. Beniwal and S. Khanna, "Recognition of Power Quality Disturbances in Wind-Grid Integration by using TT-transform," Proceedings of the 2016 Sixth Int. Conf. on Advanced Computing and Communication Technologies, pp. 323-330, 2016.

[37] M. K. Saini, R. K. Beniwal and Y. Goswami, "Detection of voltage sag causes by using Legendre Wavelet Transform," Proceedings of the 2016 Sixth Int. Conf. on Advanced Computing and Communication Technologies, pp. 308-314, 2016.

[38] M. K. Saini, R. K. Beniwal and S. Khanna, "Critical Analysis of Power Quality Issues in Wind-Grid Integration," Proceedings of the 2016 Sixth Int. Conf. on Advanced Computing and Communication Technologies, pp. 315-322, 2016.

[39] M. K. Saini and R. Kapoor, "Power Quality Events Classification using MWT and MLP," Advanced Materials Research, vol. 403, pp. 4266-4271, 2012.

[40] M. K. Saini, R. Kapoor and N. Mittal, "Nonlinear analysis of power quality events," 2nd IEEE International Conference on Sustainable Energy and Intelligent Systems, pp. 58-62, 2011.

[41] S. Dahiya, D. K. Jain, M. K. Saini, A. Kumar and R. Kapoor, "Automatic Classification of Power Quality Events using Multiwavelets," International Conference on Power Electronics, Drives and Energy Systems, New Delhi, pp. 1-5, 2006.

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Table 1: Service Quality Mean Gaps Score

Statements	Perception(P)	Expectation(E)	Gap(P-E)
Tangibility			
Have modern looking equipment	4.2539	4.5688	-0.3149
Organization's physical facilities visually appealing	4.3432	4.4357	-0.0925
Employees 'reception desk appearing neat and clean	4.4236	4.5349	0.1113
Physical facilities related to the service (such as pamphlets or statements) visually attractive	4.4945	4.6255	-0.131
Written materials easy to understand	4.0534	4.4563	-0.4029
Total average	4.31372	4.52424	-0.21052
Reliability			
Promises are fulfilled on their certain.	3.9843	4.5342	-0.5499
Organization is understanding the problem and supportive for customers	3.7625	4.2653	-0.5028
performs their work correctly on the first time	4.3762	4.6534	-0.2772
Provides error free statements or reports	3.9763	4.2543	-0.278
For all staff members and all the day time, the level of service are same	3.9546	4.5342	-0.5796
Total average	4.01078	4.44828	-0.4375
Responsiveness			
Organization reacts quickly in the emergency.	4.2432	4.5762	-0.333
Staffs ready to response customers' queries	4.1876	4.4235	-0.2359
Specific times for service activities provide to customer	4.3876	4.5986	-0.211
organization treated public situations with care and seriousness	4.1986	4.376	-0.1774
Provide quick service to the customer	4.1834	4.5342	-0.3508
Total average	4.24008	4.5017	-0.26162
Assurance			
Employees behavior still confident with customer	4.4253	4.6328	-0.2075
Staff seems know what they are responsible for or what they need to do	4.0125	4.2951	-0.2826
Kindliness and gentle behavior of staff	4.2653	4.5243	-0.259
Customer feel safe when they do their transactions	4.3982	4.5392	-0.141
Employees polite with customer in the office.	4.3214	4.6321	-0.3107
Total average	4.28454	4.5247	-0.24016
Empathy			
Provide customer separate care	3.9873	4.2987	-0.3114
Provide personal attention to customer	3.8675	4.5231	-0.6556
Know customers particular needs	3.9845	4.1654	-0.1809
Suitable Opening Hours	4.0234	4.3987	-0.3753
Staff giving customers important awareness about the service	3.9653	4.4356	-0.4703
Total average	3.9656	4.3643	-0.3987

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Table 2: Dimensions' Mean Gap Scores

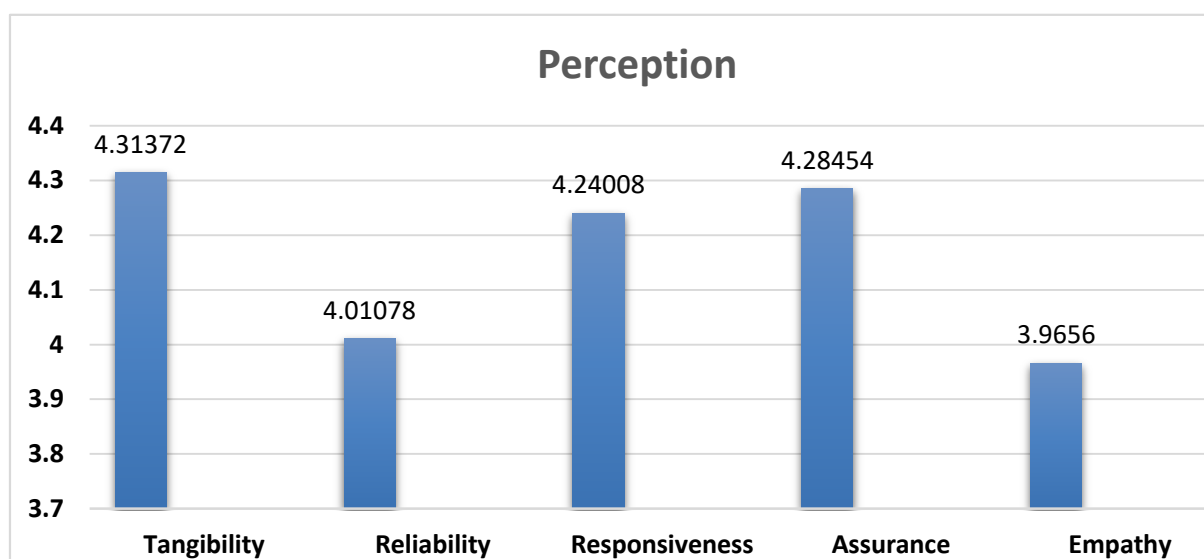| Dimensions	Perception	Expectation	Gap
Tangibility	4.31372	4.52424	-0.21052
Reliability	4.01078	4.44828	-0.43750
Responsiveness	4.24008	4.5017	-0.26162
Assurance	4.28454	4.5247	-0.24016
Empathy	3.9656	4.3643	-0.39870

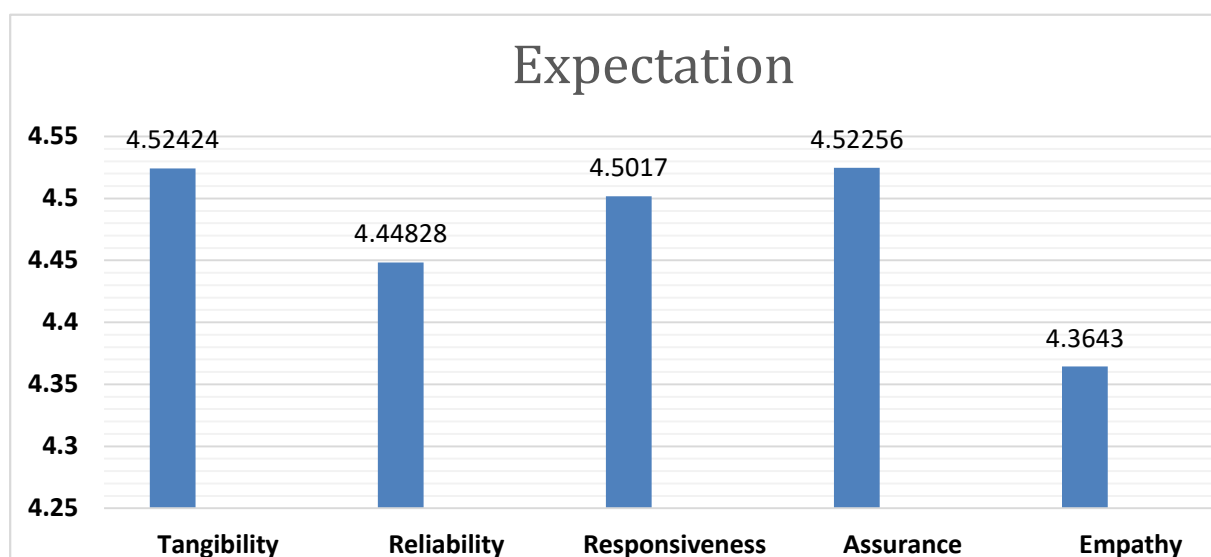Figure 1: Perception scores of different dimensions
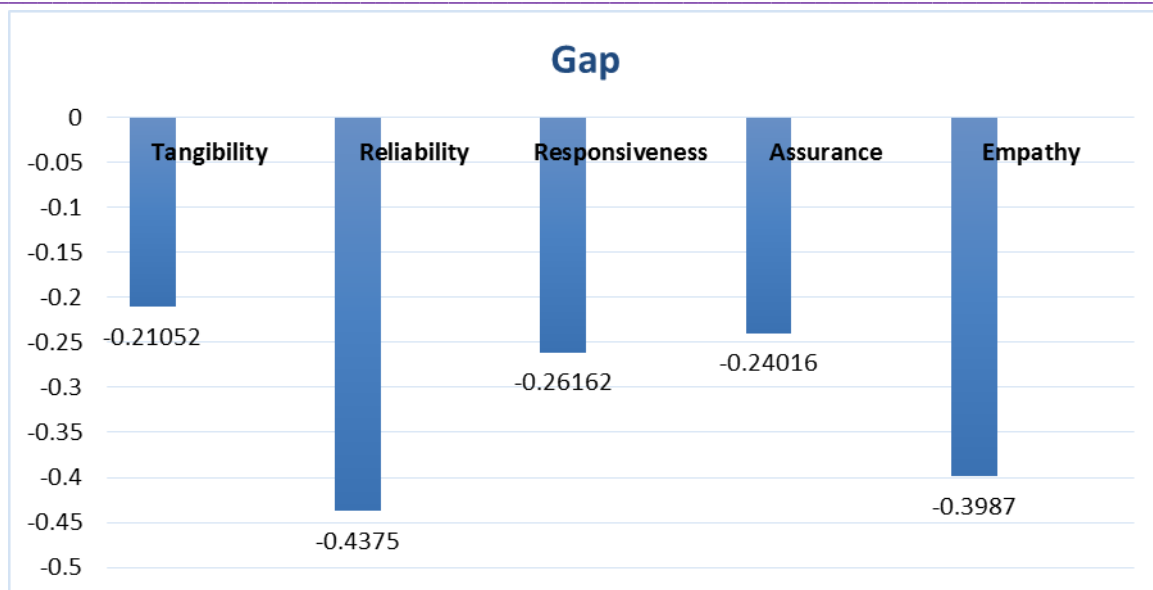

Figure 2: Expectation scores of different dimensions

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Figure 3: Gap Score of different dimensions

Table 3: Un-weighted Score

Dimensions	Gap
Average mean score of Tangibility	-0.21052
Average mean score of Reliability	-0.43750
Average mean score of Responsiveness	-0.26162
Average mean score of Assurance	-0.24016
Average mean score of Empathy	-0.39870
Total mean gap	-1.5485
Un-weighted Score = average mean/5	**-0.3097**

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