



EXPECTANCY-DISCONFIRMATION BASED ASSESSMENT OF CUSTOMER SATISFACTION WITH ELECTRIC UTILITY IN HARYANA

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ABSTRACT

Customer satisfaction has become a pivotal option for electric utilities in Haryana to tackle with the soaring losses. This work assesses the customer satisfaction using expectancy-disconfirmation paradigm which is based on analysis of the service quality. The quality of company's performance is judged against the customers' needs. For this purpose, SERVQUAL model having ten different dimensions has been employed for comparing the company's performance and the customers' expectations. This work determines the customer satisfaction depending on the result of SERVQUAL model, i.e., whether performance confirms with the expectations or disconfirms. This empirical analysis has been carried out by conducting the sample survey with 500 respondents from five districts in Haryana which is served by UHBVN. Results of this study show that customers are satisfied with communication service and empathy of the electric utility. They have negative perceptions and are not satisfied with the company's services with respect to other eight dimensions of service quality.

Keywords – Customer satisfaction, SERVQUAL model, gap analysis, expectancy-disconfirmation.

1. INTRODUCTION

Electricity distribution sector is reeling under losses which are badly impacting the service quality of the electricity service sector (Saini, 2018a, 2018b). It can also be understood in other way that poor service quality of electric utilities is causing financial loss to them (Saini, 2017). Losses and service quality have interdependent relationship (Saini, 2018c). In both ways, service quality has become a serious matter of concern for the electric utilities. In today's competitive world, it has gained more momentum to make the company stand in the fierce competition of the market. Though, the public sector has less competition, even then, service quality largely determines the profitability of the electric utility (Bolton and Drew, 1991; Singh et al., 2016). Since, customers have become more aware about their rights about the services they are offered, raising the service quality has become the need of the hour for electric utilities to sustain in the market. Beside appropriate quantity of electricity supply, now, customers also expect good quality of supply and other related services which are intangible. Consequently, measurement of the electricity services is not an easy task. Focussing on the quality of power supplied, many authors have worked on the power quality analysis of the electricity used by the customers (Saini&Kapoor, 2012; Kapoor&Saini, 2007; Saini et al., 2011; Saini&Kapoor, 2010; Saini&Beniwal, 2018).

Measurement of service quality of the electric utilities becomes important as the level of services offered to the customers is associated with the customer satisfaction (GrenlerandGwinner, 2000). Good service quality reflects the superiority/excellence (Taylor & Baker, 1994) which further brings the customer satisfaction. Customer Satisfaction is defined in many different ways in literature. Some authors define customer satisfaction as post choice evaluative judgement related to a particular service paid for. Customer satisfaction is the result of assessment made by the customer of upto what level the utility services fulfil their expectations (Bruhn, 2003). The most widely employed model for this assessment is expectancy-disconfirmation paradigm. Expectancy-disconfirmation paradigm depends on the customer expectations from the utility services and by how much the actual service disconfirms with the expectations (Oliver 1981). Positive disconfirmation, i.e., higher level of company performance than expected performance, results into customers' satisfaction and negative disconfirmation leads to customer dissatisfaction. Customers' perceptions of company's performance depend on the quality of the services delivered (Cronin and Taylor, 1992) and on the evaluation of overall experience with the company (Jones and Suh, 2000).

Expectancy-disconfirmation approach focuses on the difference between the customer expectations from company's services and actual performance of the company (Oliver, 1980). Actual performance of the company forms the customers' perceptions towards its services. Thus, the judgement of customer satisfaction using expectancy-disconfirmation paradigm is based on the gap between customer expectations and their perceptions towards company's services on different dimensions. The relationship between customer satisfaction and the service quality gap on different dimensions of services is indicated in Figure 1. A review of the relevant literature also indicates that service quality is closely tied to customer satisfaction (Wisniewski & Donnelly, 1996; Sureschander, Rajendran, & Nitecki, 2002).

Measurement of gap or service quality can be performed using service quality models. There has been many models proposed for the measurement of service quality, but the most reliable and exploited model is SERVQUAL model developed by Texas A& M University (TAMU) Professors Valarie A. Zeithaml, A. Parasuraman, and Leonard L. Berry in 1980s (Parasuraman et al., 1985; Parasuraman et al., 1988). SERVQUAL measures the customers' needs and company performance at ten different dimensions, briefed below:

Tangibility: This dimension measures appearance of physical facilities, equipments, personnels, and different related materials.

Reliability: This dimension measures ability to perform the promised service dependably and accurately.

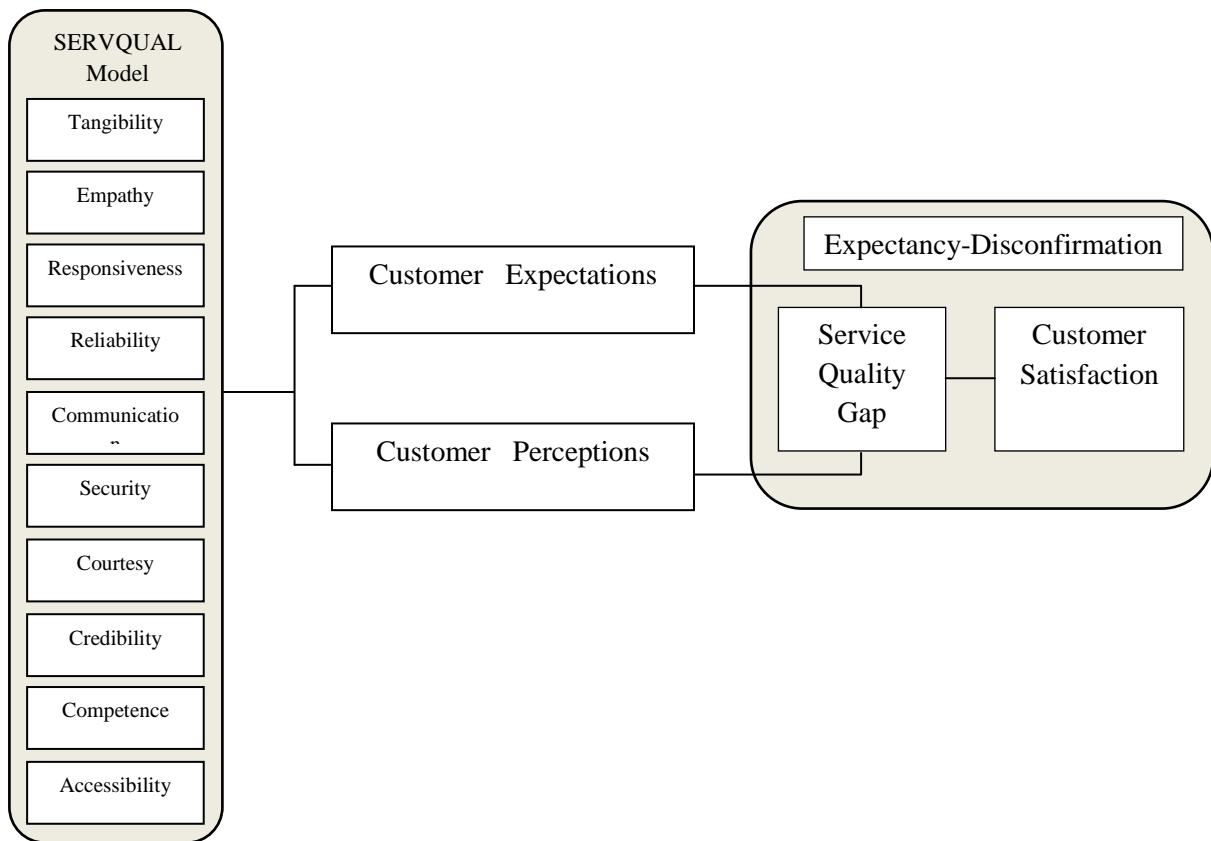


Figure 1. Schematic Diagram for Relationship between Service Quality and Customer Satisfaction

Responsiveness: This dimension measures willingness to help customers and provide prompt service.

Competence: This dimension measures possession of required skill and knowledge in vague to perform the demanded service.

Courtesy: This dimension measures politeness, respect, consideration and friendliness of contact personnel.

Credibility: This dimension measures trustworthiness, believability, honesty of the service provider.

Security: This dimension measures freedom from danger, risk, or doubt.

Accessibility: This dimension measures approachability and ease of contact.

Communication: This dimension measures listening to its customers and acknowledging their comments.

Empathy: This dimension measures the company's tendency of giving personal attention to the customers for their well-being.

All these dimensions of SERVQUAL model have been considered in this work for analysing the service quality of the electric utility. In this study, empirical study has been

undertaken using the well-structured questionnaire based on SERVQUAL model (Saini et al., 2018). The model gives the gap which defines the disconfirmation/confirmation of customer expectations with the services they are offered. Using the expectancy-disconfirmation paradigm, customer satisfaction is determined on the basis of confirmation-disconfirmation.

2. OBJECTIVES OF THE STUDY

This study aims at the assessment of customer satisfaction with UHBVN, electricity distribution company serving northern districts of Haryana. Based on the SERVQUAL model and expectancy-disconfirmation paradigm, this paper comprises of following objectives:

1. To measure the gap between customer expectations and customer perceptions of the services offered by electricity distribution company in Haryana.
2. To assess the customer satisfaction with the services offered by electricity distribution company in Haryana.

3. RESEARCH HYPOTHESES

This study presents the assessment of customer satisfaction with the electricity distribution company. Following null hypotheses have been framed for this study.

H_0^1 : Customers are satisfied with tangibility of the electric utility.

H_0^2 : Customers are satisfied with empathy of the electric utility.

H_0^3 : Customers are satisfied with responsiveness of the electric utility.

H_0^4 : Customers are satisfied with reliability of the electric utility.

H_0^5 : Customers are satisfied with communication services of the electric utility.

H_0^6 : Customers are satisfied with security in services of the electric utility.

H_0^7 : Customers are satisfied with courtesy of the electric utility.

H_0^8 : Customers are satisfied with credibility of the electric utility.

H_0^9 : Customers are satisfied with competence of the electric utility.

H_0^{10} : Customers are satisfied with accessibility of the electric utility.

H_0^1 to H_0^{10} gives the null hypotheses concerned with different dimensions of services of the electric utility. There is no interdependency between all these null hypotheses. In this work, expectancy-disconfirmation approach is used for accepting/rejecting the hypotheses.

4. RESEARCH METHODOLOGY

Exploratory cum descriptive research design has been adopted in this study. This study undertakes the empirical analysis using the collected data through sample survey in five districts of Haryana State. Thus, respondents comprise of electricity customers of northern Haryana where UHBVN caters the electricity need of the residents. In this study, stratified random sampling has been used for the selection of respondents. There are eleven districts of the State of Haryana which come under the jurisdiction area of UHBVNL. Randomly, five districts have been chosen as different strata. Selected districts are Rohtak, Sonipat, Karnal, Panipat and Kurukshetra. Total sample population for all districts is taken as 500. Here, population means electricity connections. Thus, the sample population for the survey is calculated for each district using equation (1) as per stratified random sampling:

$$\text{Sample size} = \frac{\text{Domestic connections of district}}{\text{Total domestic connections under UHBVN}} \times 500 \quad (1)$$

As sample population comprises electricity connections, equation (1) gives number of electricity customers asked to fill the questionnaire from each district.

This study performs the sample survey using well-structured questionnaire instrument. The questionnaire consists of three parts: demographic profile, expectation and perception. Demographic part collects the respondents' personal information like age, gender, category, education, monthly income, locality, and type of employment. Other two parts of the questionnaire are designed on the basis of SERVQUAL model. Questionnaire comprises of ten dimensions of SERVQUAL model, i.e., tangibility, empathy, responsiveness, reliability, communication, security, courtesy, credibility, competence and accessibility. Both expectation and perception part include five questions for each dimension. The responses are collected through 5-point Likert scale varying from 1 (highly disagree) to 5 (highly agree). Empirical analysis on collected data has been done in SPSS (version 20.0) software.

5. DATA ANALYSIS

5.1. Demographic Analysis

Demographic profile of customers like age, gender, education, income, category, type of employment affects the customer expectations and perceptions regarding the service quality of utility company in different manner. For example, highly educated customer will

have high expectations from the utility company. Similar to education, all other demographic characteristics affect the customers' expectation and perception differently. Therefore, demographic analysis of 500 respondents is carried out in the present study. Table 1 shows the demographic profile of respondents in terms of their age, gender, category, education, monthly income, locality and type of employment.

Out of 500 respondents, maximum respondents (43%) are of age group 30-40 years followed by age group 18-30 years (20.8%), age group 40-50 years (17.4%) and age group 50-60 years (13.8%). Most of the respondents (74%) are male and only 26% respondents are female. 58.8% respondents belong to general category and 23.8% respondents belong to OBC category. Rest of the respondents are of SC/ST category. Maximum respondents, i.e., 43.6% are graduate and 21.8% respondents have studied upto 10+2. 11.4% respondents are matric passed and 6.8% respondents are illiterate also. 11.8% respondents are post-graduate/above whereas 4.6% respondents have another qualification.

Table 1. Demographic Profile of Respondents

Variable	Category	Frequency	Percent
Age	18-30 years	104	20.8
	30-40 years	215	43.0
	40-50 years	87	17.4
	50-60 years	69	13.8
	Above 60 years	25	5.0
Gender	Male	370	74.0
	Female	130	26.0
Category	General	294	58.8
	OBC	119	23.8
	SC/ST	87	17.4
Education	Illiterate	34	6.8
	Matric	57	11.4
	Upto 10+2	109	21.8
	Graduate	218	43.6
	Post Graduate/ Above	59	11.8
	Others	23	4.6
Monthly Income	UptoRs. 10000	107	21.4
	Rs. 10000-50000	194	38.8
	Rs. 50000-100000	140	28.0

	Above Rs. 100000	59	11.8
Locality	Rural	137	27.4
	Urban	363	72.6
Employment	Self-employed	201	40.2
	Government Job	134	26.8
	Private Service	97	19.4
	Unemployed	48	9.6
	NGO Worker	20	4.0
	Others	0	0.0

Locality-wise, 27.4% respondents account for rural residents and 72.6% respondents account for urban residents. Among all respondents, 21.4% and 38.8% respondents are earning upto Rs. 10,000 and upto Rs. 50,000 respectively in a month. 28% respondents have monthly income between Rs. 50,000 and Rs. 1,00,000 and 11.8% respondents have above Rs. 1,00,000. 40.2% respondents do their own business and 26.8% are Government employees. 19.4% respondents work in private companies and 4% respondents are NGO workers. All the respondents belong to different demographic profile which has implications on what they expect from electric utility and how they perceive the services of electric utility.

5.2. Reliability Analysis

Prior to empirical analysis of the collected data, reliability of the survey instrument has been checked by calculating the Cronbach coefficient alpha (Cronbach, 1951). This coefficient also gives the internal reliability of the collected data of different dimensions. For the instrument and the collected data to be considered valid for survey, Cronbach alpha should be more than 0.70 (Nunally, 1978). To perform the reliability analysis, Cronbach alpha's value has been computed for all ten dimensions of SERVQUAL model in case of customer expectations. Same coefficient is calculated for all dimensions of customer perceptions. The reliability of all dimensions of expectations and perceptions is shown in Table 2. As, it is observed from Table 2, that all dimensions of expectation and perception have value of alpha above than 0.70. Overall reliability coefficient in case of expectation and perception is also high. Thus, the designed instrument is considered valid for doing the survey and collecting reliable data for analysis. Consequently, collected data is also reliable and can be used for empirical analysis.

5.3. Descriptive analysis

For descriptive analysis of the collected data, mean of customers' expectations and perceptions towards each statement is computed in SPSS (version 20.0) software. The descriptive statistics of the

Table 2. Reliability Analysis

Dimensions	No. of Items	Cronbach's Alpha	
		Expectation	Perception
Tangibility	5	0.841	0.775
Empathy	5	0.896	0.802
Responsiveness	5	0.798	0.709
Reliability	5	0.825	0.782
Communication	5	0.758	0.807
Security	5	0.713	0.819
Courtesy	5	0.707	0.723
Credibility	5	0.809	0.813
Competence	5	0.711	0.741
Accessibility	5	0.843	0.831
Overall	50	0.851	0.794

Table 3. Descriptive Statistics of Expectation and Perception Values for SERVQUAL

Dimensions

Statements	Expectation	Perception	Gap
Tangibility			
The company has modern tools and technology.	4.325	3.324	-1.001
The company has well managed offices.	4.985	4.280	-0.705
Forms (for new connections, load change etc.) are simply written in regional languages.	4.564	4.393	-0.171
The records (of electricity connection, bills and meter, etc.) are maintained properly.	4.680	3.453	-1.227
Wires are well organized on electric poles.	4.784	4.133	-0.651
Empathy			

Employees personally attend the customers for their queries and complaints.	4.521	4.612	0.091
Company staff has operating hours suitable to customer's needs.	4.073	4.112	0.039
Rural customers get subsidies in electricity bill.	4.335	4.452	0.117
Company motivates the customers to use energy saving bulbs, fans and other products.	4.200	4.269	0.069
The bill collection centers are near to the customer's residence.	4.238	4.507	0.269
Responsiveness			
There are not long queues at bill collection centers.	4.377	4.187	- 0.190
Employees quickly respond to customers' complaints.	4.520	3.607	- 0.913
Every electricity office has helpdesk for enquiry.	4.235	3.260	- 0.975
Company gives information in advance for power cuts.	4.078	2.673	- 1.405
Customers get the satisfactory service in the first visit to the company office.	4.632	3.900	- 0.732
Reliability			
Employees give reliable answers to customers' enquiries.	4.560	3.453	- 1.107
The company provides correct electricity bills.	4.613	4.004	- 0.609
Customers get full voltage all the time.	4.875	2.927	- 1.948
Company gives 24 hours supply.	4.407	2.589	- 1.818
Meter reader honestly notes correct reading from the meter.	4.860	3.642	- 1.218
Communication			
Prior information about due date of bill is given to customers through phone.	4.523	4.627	0.104
Company provides toll-free numbers for enquiries.	4.658	4.786	0.128
Employees communicate with customers in regional language.	4.501	4.512	0.011
Company runs awareness programs through advertisement, social media and newspapers.	4.774	4.881	0.107
Company gives notice before disconnection of meter.	4.652	4.742	0.090
Security			
Customers are secured in all financial transactions.	4.457	3.547	-

			0.910
Employees show ID proof while visiting to customer premises (for meter reading etc.).	4.617	2.632	- 1.985
Company does timely maintenance of transformers.	4.864	3.024	- 1.840
Supply lines are far from the reach of customers.	4.895	2.019	- 2.876
Company properly seals the electricity meters.	4.760	3.685	- 1.075
Courtesy			
Employees behave respectfully with the customers.	4.523	2.981	- 1.542
Behavior of the employees is same with all the customers.	4.401	3.662	- 0.739
At the entrance of electricity office, ramps are available for the physically challenged customers.	4.345	3.814	- 0.531
Expertise staff is available to properly deal with physically challenged (deaf, dumb, blind) customers.	4.285	1.467	- 2.818
Customers get new connection with less formalities.	4.766	2.741	- 2.025
Credibility			
Company does repairing of equipments without charging money from customers.	4.261	3.587	- 0.674
The supply is restored within the minimum time.	4.753	2.074	- 2.679
Electricity bills are provided by the company at the time of meter reading.	3.562	1.045	- 2.517
Customers have secured toll free number/online facility to report against employees.	4.027	1.872	- 2.155
Electricity meter runs at normal speed.	4.886	4.321	- 0.565
Competence			
Billing is done on monthly basis.	3.654	1.493	- 2.161
Employees ensure the safety of customers after repairing and maintenance work.	4.627	2.247	- 2.380
Customers get the electricity bill at least 7 days before due date.	4.812	4.269	- 0.543

Major equipments (like transformer) are replaced without any delay.	4.632	2.326	- 2.306
Company takes strict actions for theft complaints.	4.715	2.213	- 2.502
Accessibility			
Employees are available in any emergency conditions.	4.528	2.589	- 1.939
Bill correction procedures are easy for customers.	4.014	2.471	- 1.543
Customers have facility of online complaint registration.	3.865	2.882	- 0.983
Customers get the online facility to apply for new connections.	4.243	1.049	- 3.194
Company provides facility to pay the bill through various modes (cash, cheques, online and drafts).	3.899	3.128	- 0.771

responses collected from respondents using SERVQUAL based questionnaire, is shown in Table 3. Almost all the statements of every dimension have mean value of expectation higher than 4. This shows that customers belonging to different demographic profile have high expectations from the company with respect to every dimension. But the customers' perceptions are not that much high for every dimension. Company's services meet the customer expectations about communication and empathy dimension of the services. In other words, customer perceptions are higher than their expectations on communication and empathy dimension. These observations show that company's performance is not remarkably good with regard to other eight dimensions of SERVQUAL model.

Table 4 shows the average gap between mean value of customer expectations and perceptions on different dimensions. Gap between expectations and perceptions reflects the level of service quality of the company. As gap is calculated using equation (1) and listed in Table 4, all dimensions except communication and empathy have negative gap. This shows that overall customers' expectations are very high as compared to their perceptions towards company's performance. They do not get the services as expected from the company on eight dimensions, i.e., tangibility, reliability, responsiveness, security, competence, credibility, courtesy and accessibility. Among all these eight dimensions, there is lowest gap (-0.751) with regard to tangibility services. Different dimensions, arranged sequentially according to the decreasing gap are as follows: competence (-1.979), security (-1.738), credibility (-1.718),

accessibility (-1.685), courtesy (-1.531), reliability (-1.34), responsiveness (-0.843) and tangibility (-0.751). This sequence has lowest performing dimension first, followed by highly performing dimensions. Thus, competence is the weakest dimension of the company's services and communication is the strongest dimension.

5.4. Hypothesis Testing

For testing the hypotheses, expectancy-disconfirmation paradigm is used. According to disconfirmation theory, if the mean value of perceptions exceeds the mean value of expectations, customer is satisfied. Customers are dissatisfied if their expectations exceed the perceptions. In other

Table 4. Paired T-Test for SERVQUAL Dimensions

Dimensions	Average Expectation	Average Perception	Average Gap	Customer Satisfaction
Tangibility	4.6676	3.9166	-0.751	Dissatisfied
Empathy	4.2734	4.3904	0.117	Satisfied
Responsiveness	4.3684	3.5254	-0.843	Dissatisfied
Reliability	4.663	3.323	-1.34	Dissatisfied
Communication	4.623	4.709	0.086	Satisfied
Security	4.719	2.981	-1.738	Dissatisfied
Courtesy	4.464	2.933	-1.531	Dissatisfied
Credibility	4.297	2.579	-1.718	Dissatisfied
Competence	4.488	2.509	-1.979	Dissatisfied
Accessibility	4.109	2.424	-1.685	Dissatisfied

words, negative gap shows disconfirmation of expectations with expectations and positive gap reflects confirmation of expectations with perceptions. Table 4 shows the average value of customer expectations and perceptions and the gap between them for all ten dimensions of SERVQUAL model. Gap for tangibility is negative showing customer dissatisfaction. This rejects the null hypothesis H_0^1 . Gap for empathy is positive which means company performance higher above the customer expectations. So, H_0^2 null hypothesis is accepted. Gaps for responsiveness and reliability are negative. Thus, customers are dissatisfied with responsiveness and reliability of the company's services. Therefore, H_0^3 and H_0^4 hypotheses are rejected. H_0^5 hypothesis is accepted because of positive gap value. All other dimensions (security, courtesy, credibility, competence and accessibility) have negative gap. Consequently, hypotheses H_0^6 , H_0^7 , H_0^8 , H_0^9 and H_0^{10} are rejected on the basis of expectancy-disconfirmation approach.

6. CONCLUSION

This study concludes that that company's performance is not meeting the customer expectations on eight dimensions (tangibility, reliability, responsiveness, security, credibility, courtesy, accessibility and competence) of SERVQUAL model. There is huge gap between customers' expectations and perceptions towards the company's services. In this work, customers' satisfaction is assessed using expectancy-disconfirmation paradigm. Using this approach, customers are found not satisfied with the company's performance on these eight dimensions whereas, for communication and empathy dimension, company's services are higher than customer expectations leading to positive gap. This results into customer satisfaction with the company's communication services and empathy. Findings of this study point out the eight dimensions on which company need to focus on improving the level of their services.

7. PRACTICAL IMPLICATIONS

The present study analyses the customer expectations and perceptions towards UHBVN. As the results suggest that there are only two dimensions of service quality, i.e., communication and empathy where the company is performing well. The company managers can assess their service quality by studying the customer perceptions collected in this work. With the limited resources, the company needs to prioritize their focus on the niche areas carved out by this study which are tangibility, reliability, responsiveness, security, accessibility, credibility, courtesy, and competence. This analysis facilitates the company to explore about the weakest and the strongest dimension and also gives the clear vision of estimates about how much the company is lagging on different dimensions. Thus, it would help in deciding the management strategies to improve their level of services and increase the customer satisfaction level which will indirectly increase their profitability also.

8. LIMITATIONS OF THE STUDY

This study covers analysis of primary data collected from the customers of one distribution company, UHBVN. More comprehensive view can be taken by surveying all the districts served by UHBVN. This study can also be made to give more inclusive results if it is extended for other distribution companies so that performance of different distribution companies can be compared with respect to different dimensions. Analysis over the complete State can bring out the dimensions on which all the distribution companies in the State need

to be worked upon to improve their service quality and raise the customer satisfaction and customer loyalty.

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