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Identifying Supply Chain Problems Faced by Aqua Bubble Top Distribution Dealers using Mystery Shoppers in Chennai

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Abstract: Today's business world has become more competitive as they try to attract more customers but fail to keep them satisfied and in return the customers tend to choose the promising marketer .Thus the firms have to first explore the various problems faced by them and must take corrective action to remain successful in the core competing business world. Model is a constant instrument which can be adapted to any nature of input but problems must be identified and rectified in order to cope up along with the model, thus an effective distribution channel has been considered by the researcher. This paper aims to study a set of problems faced by Aqua bubble top suppliers in the city of Chennai, Tamil Nadu, India.

Keywords: Supply chain problems, Aqua bubble top dealers, Mystery shopper.

1. INTRODUCTION

Water is a prime source which is needed at all times by the human community. Time and cost implication will occur if the supply chain is not being managed properly. Aqua has a good track trace and will lead to a successful business; if it is being managed without any minor problems. Supply chain term was first coined in the early 1980s to describe the range of activities coordinated by an organization to procure and manage supplies **(Oliver and Webber, 1982).** The real business community has not properly managed supply chain model due to lack of problem identification. All the various problems concerned with right from raw material (water) procurement till the delivery activity must be managed. Running a business with an important source for life is not easy were it needs huge efforts to sustain the market as a successful market leader gaining customer loyalty. Mystery shoppers are silent observers who intend to collect data using keen observational mind. A supply chain stays tight without taking any efforts to analyse the lacking problems. Here in this research the researchers have employed mystery shoppers to engage with suppliers and to collect data regarding various problems faced by Aqua bubble top suppliers. Mystery shopping is a measure of customer's perception, but the perception measurement is done covertly in almost all the industries to rectify the problems and to take corrective actions **(Calvert, 2005)**.The concept of mystery shopping is widely used in almost all the service providing industry to measure customer satisfaction because customers keep the business grow and sustain.

2. OBJECTIVES OF THE STUDY

- To explore the various problems faced by the Aqua bubble top water suppliers due to a poor supply chain management.
- To use path analysis to determine which factor contributes the most towards SCM problem.

3. RESEARCH METHODOLOGY

The paper attempts to identify the various problems faced by Aqua bubble top suppliers in the city of Chennai in the country of India. The researchers have made use of **"mystery shoppers"** as a tool to collect

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data from the Aqua bubble top suppliers. Initially a Cronbach alpha test had been employed to check the reliability of the instrument. Then a principal component analysis along with a rotation matrix is used. In order to determine whether the sub scales were suitable for the study two tests were used i.e., **KMO and Barlett's test of sample adequacy**. The type of sampling plan used is purposeful sampling. Data was collected from 40 **Aqua bubble top distribution dealers** in and around the city of Chennai using mystery shoppers. Observational method and active interaction was used to collect data and hence the researcher has adopted a purposeful sampling method. The collected data was tabulated and coded for analysis. The collected data was analysed using the statistical package for social sciences **(SPSS 21.0) and smartPLS** for providing path diagrams.

4. LIMITATIONS OF THE STUDY

The tools used for analysis has its own technical bias and has impact on the findings and the study focuses only on Aqua bubble top distribution dealers in and around the city of Chennai.

5. REVIEW OF LITERATURE

Supply chain management has received attention since the early 1980s, yet conceptually the management of supply chains is not particularly well-understood, and many authors have highlighted the necessity of clear definitional constructs and conceptual frameworks on supply chain management [20] **(Saunders, 1995, 1998; New, 1995; Cooper et al., 1997; Babbar and Prasad, 1998). Saunders (1995)** warns that pursuit of a universal definition may lead to unnecessary frustration and conflicts, and also highlights the fragmented nature of the supply chain management, drawing as it does on various antecedents including industrial economics, systems dynamics, marketing, purchasing and inter-organisational behaviour. [19] **Scott and Westbrook (1991)** and **New and Payne (1995)** describe supply chain management as the chain linking each element of the manufacturing and supply process from raw materials through to the end user, encompassing several organizational boundaries. [6] **Farley (1997)** concludes that the single most important prerequisite is a change in the corporate cultures of all members in the value chain to make it conducive to supply chain management. The paradigm of "Supply Chain Management (SCM)" has gone through huge developments globally. SCM seeks to enhance competitive performance by closely integrating the internal cross-functions within a company and effectively linking them with the external operations of suppliers, customers, and other channel members to be successful **(Otchere, Annan & Anin, 2013;** [15] **Monzcka and Morgan, 1997;** [4] **Ellram and Cooper, 1993;** [11], [12], [13], [14].**Lambert, James and [5]Elram, 1998;** [8], [9] **Kim, 2006; Tan, Kannan, and Hadfield, 1998).** The objective of supply chain management is to maximize the overall value generated rather than profit generation [16] **(Otchere et al, 2013)**. A traditional culture that emphasizes seeking good, short-term, company-focused performance appears to be in conflict with the objectives of supply chain management. The Supply chain performance measurement considering the industry perspective [2] **(Bongsug Chae, 2009; Verma et al., 2008;** [18], [19], **Rick Hoole, 2005; Khan et al., 2009; Hong et al., 2010; Kannana and Tan, 2005; Wickramatillake et al., 2007;** [21] **Theeranuphattana and Tang, 2008; Sun et al., 2009; Chris Morgan, 2004; Yeung, 2008; Burgess and Singh, 2006; Fantazy et al., 2009; Hervani et al., 2005; Soo Wook Kim, 2006)** models, methods and frameworks related to supply chain partnership **(kim et al., 2010),** supply chain integration [7] **(Flynn et al., 2010),** supply chain interaction **(Salvador et al., Salvador)**, Supplier relations **(Giannakis, 2007; Ou et al., 2010; Simpson and Power, 2005; Mihalis Giannakis, 2007; Cox et al., 2004)** Supply chain Information **(Forslund and Jonsson, 2007; Visich et al., 2009; Fawcett et al., 2007; Kaipia and Hartiala, 2006; Sezen, 2008), supplier selection (Weber, 1996), Quality improvement (kuei et al., 2001; Cagnazzo et al., 2010; Mangiameli and Roethlein, 2001),** Supply chain effectiveness **(Zokaei and Hines, 2007)** [25] **,** Supply chain collaboration **(Papakiriakopoulos and Pramatari, 2010; Wiengarten et al., 2010)** for different types of goods and services such as FMCG, perishable goods [1] **(Aramyan**

et al., 2007), services etc. have been researched for increasing the performance of supply chain at different cross sections of it to derive the profit as well as sustained market position and growth for organisations. **(Wilson, 1997)** [23] Made an attempt to study the measurement of service delivery in service industries and stated that mystery shopping is a major industry in the. He even strongly concluded that to overcome these, standards need to be constantly updated and staff needs to see the ultimate consequences and benefits of mystery shopping activity. However, little effort is to be made to integrate mystery shopping results with other measures of the service delivery process such as customer satisfaction, staff attitudes, and number of complaints, customer retention and sales figures.

6. ANALYSIS AND INTERPRETATION

Reliability Test

Since this research has utilized proper linkert-type scale it is important to test the internal consistency and the reliability of the questionnaire and thus we employ a Cronbach's alpha test. A total of 16 scale constructs were tested for reliability and the below table clearly shows that the set of constructs used in this study is perfect and highly reliable

Table 1.0
Showing Reliability Statistics

Reliability Statistics	
Cronbach's Alpha	*N of Items*
.800	16

Sample Adequacy Test and Sphericity Test

Table 1.1
Showing KMO and Bartlett's tests

KMO and Bartlett's Test		
Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		.722
Bartlett's Test of Sphericity	Approx. Chi-Square	**297.865**
	Df	.45
	Sig.	.000

The above table shows the sample adequacy test by KMO **(Kaiser-Meyer-Olkin)** and **Bartlett's** test. KMO compares the size of the observed correlation coefficient were the size of the partial correlation coefficient for the sum of analysed variables is 85.4% and is considered to be reliable and thus the research can be proceeded with factor analysis.

Factor Analysis

The first and the foremost initial process in factor analysis is to determine the linear components within the data set i.e., the Eigen values by calculating the Eigen values for R-matrix. **SPSS**extracts factors which has values more than 1 which is acceptable. Principal component analysis is an important technique to determine the strong patterns in the data set and an important instrument for data reduction is followed. The initial value is 1 by definition and extraction values are more than .5 is usually accepted. In this research the extraction values are high i.e., more than .5 which indicates the proportion of each variables variance. We now proceed with the total variance table.

Table 1.2
Showing Communalities for scale items used in Factor Analysis

Scale constructs	*Initial*	*Extraction*
Urgent and unexpected product need q1	1.000	.835
Timely delivery delay q2	1.000	.774
Repairs and replacement after delivery q3	1.000	.840
Excluding holidays as a main problem q4	1.000	.954
Removing old dispensers and empty cans q5	1.000	.835
Broken cap problem q6	1.000	.774
Transport a main problem (drop in time) q7	1.000	.840
Maintaining accurate accounts q8	1.000	.954
Sudden hike in water rates q9	1.000	.616
Unwanted media critics affecting demand q10	1.000	.958
Coping up with power problems q11	1.000	.953
Delivery not received q12	1.000	.717
Unwanted arguments with customers q13	1.000	.489
Distance as a problem q14	1.000	.958
Loss of cans q15	1.000	.953
Customer drop rate q 16	1.000	.845

Total Variance Explained

From the factor we have derived 8 iterations and the total cumulative value is 78.345 and finally we proceed with the rotated component matrix

Finally the rotated component analysis is used to shows the factor loadings for each scale construct. Based on the highest factor loadings each the following names have been given. The factor matrix contains the coefficients which express the standardized variables in terms of the factors.

These coefficients, the factor loadings, represent the correlations between the factors and the variables. A coefficient with a large absolute value indicates that the factors and the variables are closely related.

The coefficients of the factor matrix can be used to interpret the factors. Although the initial or un rotated factor matrix indicates the relationship between the factors and individual variables, it seldom results in factors that can be interpreted, because the factors are correlated with many variables. In this case, the factors have been rotated so that each factor has significant loadings (more than 0.40) ideally with not more than one variable.

The method for rotation used here is the Varimax procedure. This is an orthogonal method of rotation that minimizes the number of variables with high loadings on a factor, thereby enhancing the interpretability of the factors.

Table 1.3
Showing Rotated Component Matrix

Scale	*1*	*2*	*3*	*4*	*5*	*6*	*7*	*8*
Rotated Component Matrix[a]	.876							
Broken cap problem *q*6	.857							
Urgent and unexpected product need *q*1		.719						
Timely delivery delay *q*2		.660						

Scale	*1*	*2*	*3*	*4*	*5*	*6*	*7*	*8*
Removing old dispensers and empty cans *q*5			8.33					
Unwanted media critics affecting demand *q*13			8.34					
Distance as a problem *q*14				.585				
Maintaining accurate accounts *q*8				.471				
Sudden hike in water rates *q*9					.579			
Repairs and replacement after delivery *q*3					.515			
Transport a main problem(drop in time) *q*7						.456		
Coping up with power problems *q*11						.567		
Loss of cans *q*15							.675	
Delivery not received *q*12							.678	
Unwanted arguments with customers *q*13								.654
Excluding holidays as a main problem *q*4								.764
Customer drop rate *q*16								.345

On the basis of Table, five components were identified for the 16 variables. Based on the item loadings, these factors were respectively labelled as follows:

Explanation for each factor clubbing:

1. **The factor "problems which lead to expenses" explains the 1st component.** The customers must be educated to keep the bubble top cans safe till the next delivery is given. In case of the cans being lost the supply chain is being subjected to loss and leads to unwanted expenses.
2. **The factor "loosing customer loyalty" explains the 2nd component.** Prompt service is a main factor which attracts new customers and keeps the existing customers happy; if this is not given importance it may lead to poor customer loyalty and may spoil the reputation of the business.
3. **The factor "poor logistics" explains the 3rd component.** Quick and timely delivery of products and services to the end consumer is very important. Not just the transport but there is other factors which play an important role in logistics and they must be taken care of.
4. **The factor "Un-expected problems" explains the 4th component.** Problems may arise at any time during any situation during the supply chain activity which may in turn reduce the profit and reputation of the business and thus it must be rectified.
5. **The factor "In-complete supply chain" explains the 5thcomponent.** Even if one process in between is not properly finished the chain of reaction in the supply chain gets affected and leads to in-complete supply chain function. In order to avoid this all the activities in the supply chain must be performed.
6. **The factor "Increased operating expenses" explains the 6th component.** Power problems and loss of cans leads to increased operating problems.
7. **The factor "No relationship drive" explains the 7th component.** The customers have no intension to maintain relationship with the customers.
8. **The factor "Customer drop rate" explains the 8th component.** The SCM dealers tend to lose their customers and leads to customer dropout rate.

Hypothesis Development

HO1: C1-Problems which lead to expenses has no impact on the overall SCM Problem

HO2: C2-Loosing customer loyalty has no impact on the overall SCM Problem

HO3: C3-Poor logistics has no impact on the overall SCM Problem

HO4: C4-UN-expected problems has no impact on the overall SCM Problem

HO5: C5-In -complete supply chain has no impact on the overall SCM Problem

HO6: C6-Increased operating expenses has no impact on the overall SCM Problem

HO7: C7-Customer drop rate has no impact on the overall SCM Problem

HO8: C8-No relationship drive has no impact on the overall SCM Problem

Chart 1.4
Showing path analyses of various SCM Problems to the overall SCM Problem

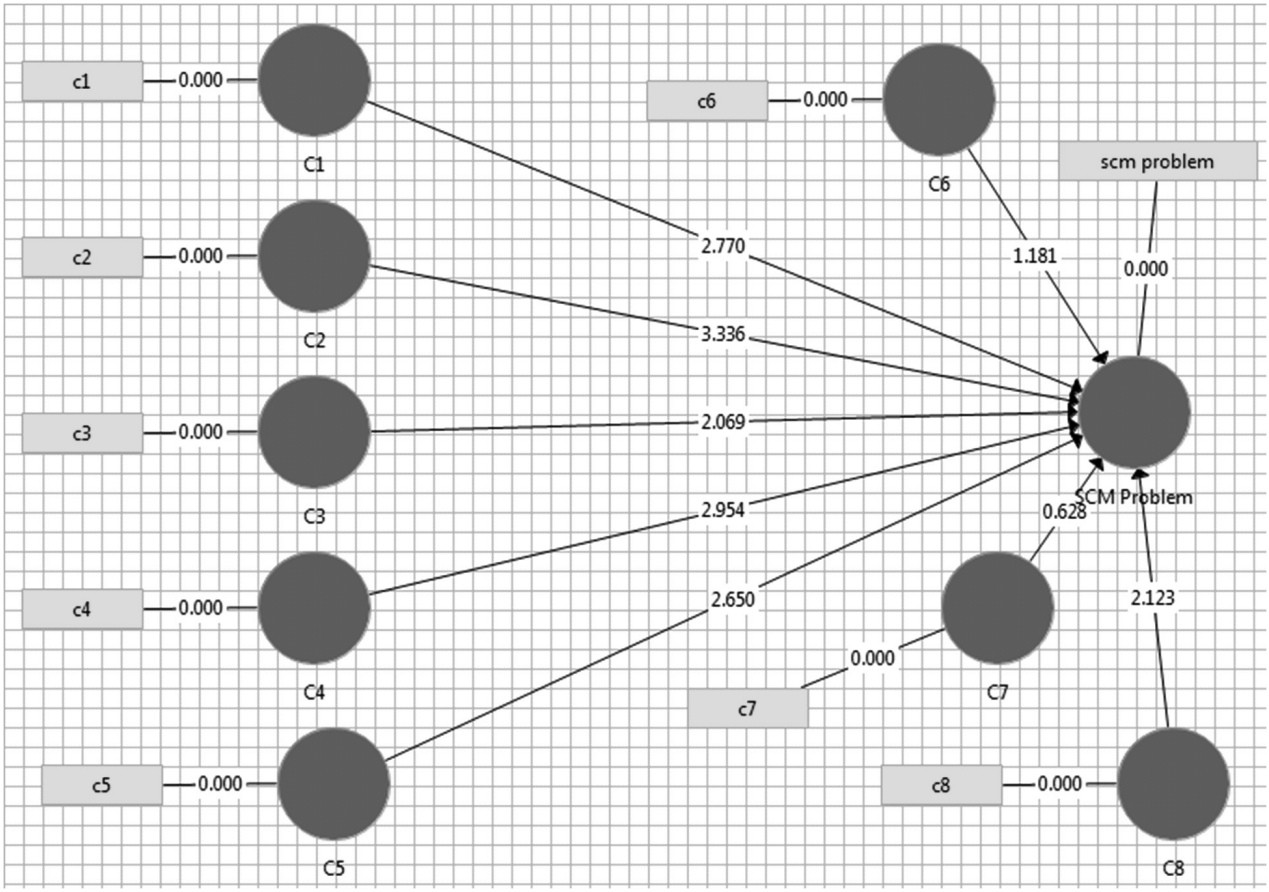

Table 1.5
Showing boot strap analysis

Path Coefficient	*Original sample*	*Sample mean*	*Standard error*	*T value*	*P value*
C1 → SCM Problem	0.319	0.306	0.115	2.770	0.005
C2 → SCM Problem	0.300	0.305	0.090	3.336	0.005
C3 → SCM Problem	0.195	0.206	0.094	2.069	0.005
C4 → SCM Problem	0.292	0.286	0.099	2.954	0.005
C5 → SCM Problem	0.283	0.288	0.107	2.650	0.005
C6 → SCM Problem	–0.126	0.134	0.107	1.181	0.008
C7 → SCM Problem	0.063	0.070	0.100	0.268	0.234
C8 → SCM Problem	–0.277	0.262	0.130	2.132	0.005

Table 1.6
Showing hypothesis acceptance/rejection criteria

S.No.	*Hypothesis*	*Accepted*	*Rejected*
1	HO1-C1 → SCM Problem		Rejected
2	HO2-C2 → SCM Problem		Rejected
3	HO3-C3 → SCM Problem		Rejected
4	HO4-C4 → SCM Problem		Rejected
5	HO5-C5 → SCM Problem		Rejected
6	HO6-C6 → SCM Problem	Accepted	
7	HO7-C7 → SCM Problem	Accepted	
8	HO8-C8 → SCM Problem		Rejected

Inference for the above table 1.5 and 1.6

The above analysis clearly states that though there are eight major factors which contribute towards the Supply Chain Management problem, six factors are over influencing except operating expenses and customer drop rate.

Implementation recommendation

The results can be properly utilized by the aqua bubble top suppliers to plan for a better supply chain network, ensuring business success by acquiring customers through satisfaction and loyalty.

7. CONCLUSION

One of the major challenges faced by firms, dealers and distributors dealing with supply chain is cost getting increased due to problem factors. The supply chain system or the model is very constant and thus the initial step is problem rectification. Many problem factors would increase, and in return it would affect the success factors of SCM namely reputation, profit and customer retention. Many small problems get together and forms a huge riot which may turn the business down. The problem lies even on the hands of the customers who are also related towards the success or the failure of SCM.

The customers must be educated to keep the bubble top cans safe till the next delivery is given. In case of the cans being lost the supply chain is being subjected to loss and leads to unwanted expenses. Thus in order to have a successful supply chain flow unwanted expenses and cost must be cut down. Prompt service is a main factor which attracts new customers and keeps the existing customers happy; if this is not given importance it may lead to poor customer loyalty and may spoil the reputation of the business. Quick and timely delivery of products and services to the end consumer is very important. Not just the transport but there is other factors which play an important role in logistics and they must be taken care of. Even if one process in between is not properly finished the chain of reaction in the supply chain gets affected and leads to in-complete supply chain function.

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