European Journal of Business and Management www.iiste.org
ISSN 2222-1905 (Paper) ISSN 2222-2839 (Online)
Vol 3, No.4, 2011

Evaluation of the Customer Perception on the Company's Marketing Mix Effort: A Case Study of Government and Private Cement Company Ltd. in Bangladesh

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Abstract

Specifically, strategic issues like customer perception on the company's marketing mix analysis, demand analysis, competitor analysis, analysis of market situation, production process have so far not been analyzed adequately. Therefore, the main objective of this study was to evaluate the customer perception on the company's marketing mix effort of Chhatak Cement Company (Government) and Shah Cement Industries Ltd. (Private). By integrating primary and secondary data, different statistical analyses were conducted. The author has also identified through factor analysis techniques in this study that, product quality, product availability, product weight, packaging, repackaging, reasonable price, transportation facilities, promotional activities, credit facilities, technical facilities, delivery in time are the significant competitive factors in the market. The analysis and findings suggest that the strategy of Shah Cement Industries Ltd. is much better than the Chhatak Cement Company. Every success of an organization depends upon effective business strategy. Customer's perception on the company's marketing mix efforts shows that for all of the factors are favorable to Shah Cement Industries Ltd. than Chhatak Cement Company. So Shah Cement Industries Ltd. can maintain the existing strategy but Chhatak Cement Company should redesign its strategy.

Keywords: Customer Perception, Marketing Mix,

1. Introduction

The economic progress of a developing country is generally gauged by the total consumption of construction materials such as cement, steel, aggregate and other such materials. The annual per capita consumption of cement in Bangladesh is around 44kg, which is one of the lowest in the world; even in the adjacent developing countries, consumption is higher. India, for example, has a per capita consumption of 100-110 kg (Meghna Cement Mills, 2002). A growth rate of around 8% per year is expected for the cement demand per year. (Murad, 2002). The biggest problem that Bangladesh faces is that the supply of the cement greatly exceeds the demand.

2. Cement Industry in Bangladesh

Cement Industry a relatively fast growing industry, is developing in pace with increasing building and construction activities. Cement has long been used as a bonding agent to unite particles or to cause one surface to adhere to another. The most common form of cement, Portland cement, is a powder obtained from burning together a mixture of lime and clay, which when mixed with water and sand or gravel, turns into mortar or concrete. The amount of cement now annually consumed in the country is about 7 million metric tons. In Bangladesh cement industry is raising industry. Before liberation war only Chhatak Cement Company is the company that partially meet the cement demand of the country. After 1975 some private entrepreneur added this industry. But after 1990 the industry condition was totally changed. A huge number of cement manufacturers came to the production. Now a lot of cement company existence in Bangladesh (77 companies) the growth rate in this industry is satisfactory.

3. Problem Statement

The biggest problem probably faced by the companies is that they have the capacity to produce a lot more than what the country needs (Hiedelberg Cement, 2004). In the present situation, Shah Cement's market share is growing, where as Chhatak Cement's market share is gradually decreasing. The main raw material used by the cement companies here is clinker. As Bangladesh does not have much source of clinker, the companies have to import it from other countries, which include India, Malaysia and Thailand to name a few. Even if there are available sources, they are not of acceptable quality (Hussaini and Fakhri 1995). But the multinational cement companies are at an advantage because they import their own clinker. They just need to pay the import duty and taxes (Cement industry beset by market situation, 2003). They also have an advantage as the government allows them to import at a very low cost if the work is done for the government. But the local companies have to pay the import duty and also the price of the clinker. They also have to suffer if there is a delay in the imports as that result in a delay in production (Meghna Cement Mills, 2002).

4. Objectives

The purpose of the study is to evaluate the customer perception on the company's marketing mix effort of Chhatak Cement Company Ltd. and Shah Cement Industries Ltd.

5. Methodology

To conduct a study systematically, it is required to follow one or more research methods for scientific investigation. Because most of the information and data of the research is both qualitative and quantitative in nature. In addition to this procedure, the study demand focused interview and discussion with selected professional experts, end users, contractors, retailers and wholesaler.

5.1. Sources of Data

Information and data will be collected both from primary and secondary sources. Mostly primary information will be used in this research. The primary sources consist of professional experts, end users, contractors, retailers and wholesaler. The secondary sources are the published official statistics, articles, books, reports, statements, documents, periodicals, internet etc. as well as unpublished research reports such as theses and dissertations.

5.2 Sampling Design

A structured questionnaire has been used for the purpose of interview to the respondents. Structured questionnaire has been chosen to broaden the scope of the information gathered to check for bias and misunderstanding in the responses and to obtain valuable quantitative judgments. Data for the variables have been collected from the respondents through 5 point Likert scale.

5.3. Data Analysis Technique

Statistical software "SPSS" package has been used for the data analysis of this study.

6. Literature Review

Ahmed *(2006)*, identified the export potentiality of Bangladesh in cement sector. In his research, he found excess capacity of cement industry in Bangladesh. He also mentioned the opportunity that exists to export cement through proper utilization of excess production capacity.

Chattopadhyay and Asim *(2004)*, mentioned that the only production stage performed in Bangladesh, to make cement, is importing the clinker and grinding it with gypsum to give pure cement other countries have integrated cement plant, which means that the cement is made from scratch to finish in the same factory.

Habib and Haroon (*2003*), the cement industry in the country began to develop after 1990, and 2001 was the most significant year for the industry. In that year the number of installed grinding mills more than doubled from 20 in 2000 to 50 in 2001, which in turn almost doubled the production capacity, and paved way for surplus. This allowed Bangladesh to become self sufficient in cement production. Though Habib and Haroon (2003) counted there were as many as 56 cement-grinding factories in the country with a total production capacity of 11.8 million tons (Habib and Haroon, 2003) but now the total number 77.

Valeria etal. *(2005)*, the market dynamics of low-income market segments defy the traditional business logic that is applied to mid-income and high-income segments; pricing strategies aim at the lowest possible price, the delivery infrastructure must be capable of handling a significant number of small transactions, promotion strategies require a considerable amount of consumer education, and even the needs and values of consumers are, in many senses structurally different. Business, particularly those whose products and services address basic human needs, can enter low-income market segments more effectively and with deeper social impact through partnerships with highly innovative citizen sector organizations. Also, CSOs can scale their impact significantly by learning to leverage the infrastructure and experience of businesses while advancing their social missions. Communities would be better served if an increasing number of new actors compete and collaborate to deploy solutions that maximize the value added to the poor.

Hamann etal. *(2007)*, the paper aims to propose a model to investigate the relationships between price, use, quality, and culture regarding the adoption of high technology branding strategy. Based on the identified areas of influence – price, use, quality and culture – a questionnaire was designed and randomly sent out to 70 respondents via e-mail. At the same time, those respondents were asked to pass on the e-mail, resulting in a total number of 94 people from 21 different countries responding to the request. The study concluded that people purchase high technology products primarily for prestige (usage) rather than to satisfy particular needs, and perception of change (culture) affected the adoption process of high-technology. Because of the focus of this survey to discover the incentives behind the adaptation process, the possibilities of using the findings for more general purposes were narrowed down. In addition, the small amount of already existing knowledge in this area made the collection and the evaluation of data very difficult, which again influenced the way the research was designed. In a globally competitive business environment the value of a strong brand in high-technology marketplace is well documented. The difficulty in maintaining a basis for differentiation, and heightened consumer price consciousness reveals the necessity to understand consumer evaluation and purchase decision processes. Therefore, this study discovered and revealed the reasons behind individual buying decisions of high-technology products. To the best of the authors' knowledge, no previous research has been done on this particular area, which makes the outcome of this survey very valuable.

7. Findings and Analysis

7.1 Descriptive Statistics of the Competitive Factors of Two Companies

The descriptive statistics of the eleven competitive factors of cement industries are showed in Table-1. Factor analysis has been widely used to examine the structure of tests or scales of various kinds, such as personality scales, attitude measures, and ability scales. The matrix of inter-correlations among the variables showed in Table-1. Inspection of correlation matrix shows that the correlations are substantial, indicating the presence of a substantial general factor. One key issue that users of factor analysis tend to overlook is that the quality of factor analytic research depends primarily on the quality of input data submitted to the analysis.

7.2 Descriptive Statistics of the Competitive Factors of Two Companies Separately

Table-2 shows that for all of the factors of mean of Shah Cement are greater than the mean of Chhatak Cement and SD for all the factors of Shah Cement are less than Chhatak Cement. So we can conclude that Shah Cement Industries Ltd. is better than Chhatak Cement Company.

7.3 Correlation Matrix of the Competitive Factors of Two Companies

Several important questions considered by a researcher preparing input data for a factor analysis. Factor analysis is designed to explain why certain variables are correlated. Moreover, common factor analysis is concerned only with that portion of total variance shared by the variables included in the model (Table-3).

7.4 Analysis of Residuals

If the factors are doing a good job in explaining the correlations among the original variables, we expect the predicted correlation matrix R* to closely approximate the input correlation matrix. In other words, we expect the residual matrix R-R* to approximate a null matrix. If the residual correlations or partial correlations are relatively large (>0.1), then either the factors are not doing a good job explaining the data or we may need to extract more factors to more closely explain the correlations. If maximum likelihood factors are extracted, then the output includes the Chi-square test for the significance of residuals after the extraction of the given factor. This test comprises two separate hypothesis tests. The first test, labeled, "Test of H_0: No common factors" tests the null hypothesis that no common factors can sufficiently explain the intercorrelations among the eleven variables included in the analysis. This test is to statistically significant ($P<0.05$). A non-significant value for this test statistic suggested that the intercorrelations may not be strong enough to warrant performing a factor analysis since the results from such an analysis could probably not be replicated.

The second Chi-square test statistic, labeled "Test of H_O: N factors are sufficient" is the test of the null hypothesis that N common factors are sufficient to explain the intercorrelations among the variables. This test is useful for testing the hypothesis that a given number of factors are sufficient to account for this data; in this instance the goal is a small chi-square value relative its degree of freedom. This out come results in a *large* P- value (p>0.05). One downside of this test is that the Chi-square test is very sensitive to sample size; given large degrees of freedom, this test will normally reject the null hypothesis of the residual matrix being a null matrix, even when the factor analysis solution is very good. Therefore, be careful in interpreting this test's significance value (Table-4).

Factors are unobserved latent variable that can be inferred from a set of observed variables. Therefore, factors cannot emerge unless there are sufficient numbers of observed variables that very along the latent continuum. Guttman (1953) has shown that if a correlation matrix is suitable for common factor analysis, then R^{-1} (The inverse of a correlation matrix) should approach a diagonal matrix as the number of variables increases while the number of factors remains constant. Kaiser and Rice (1974) proposed a measure of sampling adequacy, which indicates how near R^{-1} is to a diagonal matrix (Table 4).

Extracting more factors will guarantee that the residual correlations get smaller and thus that the chi-square values get smaller relative to the number of degrees of freedom. However, non-interpretable factors may have little utility. That is, an interpretable eleven-factor (product quality, product availability, product weight, packaging, repackaging, reasonable price, transportation facilities, promotional activities, credit facilities, technical facilities, delivery in time) solution with a better goodness-of-fit statistic.

7.5 The Kaiser Criterion and Scree Test

First, the results retain only two factors (product quality and product availability) with eigenvalues greater than 1. This criterion is probably the one most widely used. A graphical method is the *scree* test use in this study. The plot the eigenvalues shown above in a simple line plot (Figure-1). The result suggested finding the place where the smooth decrease of eigenvalues appears to level off to the right of the plot. To the right of this point, presumably, one finds only "factorial scree" – "scree" is the geological term referring to the debris which collects on the lower part of a rocky slop. According to this criterion, the results retain 2 factors (product quality and product availability) in this study.

Sometimes plotting the eigenvalues against the corresponding factor numbers gives insight in to the maximum number of factors to extract. The scree plot figure–1 showed that the rate of change in the magnitude of the eigenvalues for the factors. The rate of decline tends to be first for the first few factors but then levels off. The "elbow", or the point at which the curve bends, is considered to indicate the maximum number of factors to extract. The figure-1 showed that a rather idealistic scree plot, where a clear elbow occurred at the second factor, which has an eigenvalue right around 1. The result showed that the eigenvalue for the first few variables drop rapidly and after the second factor the decline in the eigenvalues gradually leaves off. The scree plot suggested a maximum of two factors (product quality and product availability) consider in this study. However, many scree plots do not give such a clear indication of the number of factors.

The scree plot showed that to suggest the presence of a general factor as predicted from the inspection of the correlation matrix. A large first eigenvalue (8.0) and much smaller second eigenvalue (1.3) and third eigenvalue (0.55) suggested that the presence of a dominant factor. Stretching it to the limit, one might argue that a secondary elbow occurred at third factor. That is equivalent to retaining all factors with positive eigenvalues.

7.6 Identifying Significant Loadings

The result showed that the first variable (row) and examines the factor loadings horizontally from left to right, underlining them if they are significant. This process is repeated for all the other variables. Ideally, we expect a single significant loading for each variable on only one factor; across each row there is only one underlined factor loading. It is not uncommon, however, to observe *split loadings*, a variable which has multiple significant loadings. On the other hand, if there are variables that fail to load significantly on any factor, then the analyst should critically evaluate these variables and consider deriving a new factor solution after eliminating them.

The output of a factor analysis will give several things. The Table 16 showed how output helps to determine the number of components/factors to be retained for further analysis. One good rule of thumb for determining the number of factors is the "eigenvalue greater than 1" criteria. For the moment , let`s not worry about the meaning of eigenvalues, however this criteria allows us to be fairly sure that any factors keep will account for at least the variance of one of the variables used in the analysis. However, when applying this rule, keep in mind

that when the number of variables is small, the analysis may result in fewer factor than "really" exist in the data, while a large number of variables may produce more factors meeting the criteria are meaningful. There are other criteria for selecting the number of factors to keep, but this is the easiest to apply, since it is the default of most statistical computer programs. Note that the factors will all be orthogonal to one another, meaning that they will be uncorrelated. The output is the result of the extraction of components or factors which will look in table-5.

Since the first two factors (product quality and product availability) where the only two that had eigenvalues > 1, the final factor solution will only represent 84.63% of the variance in the data. The loading listed under the "Factor "headings represent a correlation between that item and over all factor. Like Pearson correlations, they range from -1 to 1. The next panel of factor analysis output showed in table 6 and 7.

In the second column (Eigenvalue) above, we find the variance on the new factors that were successively extracted. In the third column, these values are expressed as a percent of the total variance. The results showed that factor 1 account for 72.597 percent of the variance, factor 2 for 12.033 percent, and so on. As expected, the sum of the eigenvalues is equal to the number of variables. The second column contains the cumulative variance extracted. The variances extracted by the factors are called the eigenvalues. This name derives from the computational issues involved (Table-5).

7.7 Factor Loading

Oblique rotation is rare because, although it makes linkage of the variables with the factors clearer, it makes the distinction between factors more difficult. Orthogonal rotation mathematically assures resulting factors will be uncorrelated and because of this determinism cannot be used to test if underlying factor structure is orthogonal. This is purely arbitrary, but common social science practice uses a minimum cut off of 0.3 or 0.35. Norman and streiner (1994) reported this alternative formula for minimum loading when the sample size, N, is 200 or more. Another arbitrary rule-of-thumb terms loadings as "weak" if less than 0.4, "strong" if more than 0.6, and other\wise as "moderate". These rules are arbitrary. The meaning of the factor loading magnitudes varies by research context. Forinstance , loadings of 0.45 might be considered "high" for Dichotomous items but for Likert scales a 0.6 might be required to be considered "high" (Kim and Muller,1978a ; 1978b).

Let us now perform a principal components analysis and look at the three factor solution. Specifically, let us look at the correlations between the variables and the two factors (or "New" variables), as they are extracted by default: these correlations are also called factor loadings (table-6). Apparently, the first factor is generally more highly correlated with the variables than the second factor. This is to be expected because, as previously described, this factors are extracted successively and will account for less and less variance overall.

The residual correlation matrix (Table-7) shows the difference between the observed correlation matrix and the predicted correlation matrix. If the retained factors are sufficient to explain the correlations among the observed variables, the residual correlation matrix is expected to approximate a null matrix (most value <=0.10).

8. Conclusion

Cement is the latest addition in the list of export commodities in Bangladesh. But in future the cement manufacturers must face the highly competition in domestic and international market. So the cement manufacturers should be made competitive advantages in product quality, product availability, product weight, packaging, repackaging, reasonable price, transportation facilities, promotional activities, credit facilities, technical facilities, delivery in time. In Bangladesh there is huge demand of cement in that case many multinational companies are thinking Bangladesh is a potential market for investment in cement industry.

9. Recommendations

The success of an organization depends upon effective business strategy. Product quality shows the users are fully satisfied on Shah Cement Industries Ltd. whereas the Chhatak Cement Company's product quality is not satisfactory to the customers. So Shah Cement Industries Ltd. should maintain its existing product quality and Chhatak Cement Company should improve its product quality by using modern technology. Shah Cement Industries Ltd. is using intensive marketing channel of distribution so the Chhatak Cement Company should introduce effective channel of distribution. Here Shah Cement Industries Ltd. strictly maintains the packaging system; so there is no scope to repackage the product. On the other hand Chhatak Cement Company should introduce modern technology for the purpose of packaging system which can help to protect the repackaging by other parities. Both the companies should maintain existing pricing strategy. But if Chhatak Cement Company wants to compete with global market then they should change their pricing strategy as like Shah Cement Industries. Shah Cement Industries Ltd. provides cent percent transportation facilities to the distributors, prime sellers, even end users in the same Chhatak Cement Company should introduce transportation facilities as like Shah Cement Industries. Shah Cement Industries Ltd. need to maintain existing promotional activities and Chhatak Cement Company should introduce such types of activities. Shah Cement Industries Ltd. provides credit facilities to the distributors and prime sellers. So it is better to introduce credit facilities to the buyers by Chhatak Cement Company. Shah Cement Industries Ltd. provides technical consultancy to the end users for saving it's the best interest as "Nijer Bari Nije Gori". But Chhatak Cement Company has no such kinds of facilities to the end users. In that case Chhatak Cement Company should introduce technical facilities as Shah Cement Industries. Chhatak Cement Company should formulate distribution for in such a way by which they can serve the users more effectively. Chhatak Cement Company should reduce the dealer and have hold the actual whole seller, cement traders who will tend to help all the time to sale cement.

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Appendix

Table-1: Descriptive Statistics of the Competitive Factors of Two Companies

Factors	Mean	Std. Deviation	Analysis N
Overall evaluation about product quality	3.56	1.045	200
Overall evaluation about product availability	3.02	1.865	200

Overall evaluation about the weight	3.84	1.437	200
Overall evaluation about the packaging	3.54	1.594	200
Overall restriction about the repackaging	2.64	1.698	200
Overall evaluation about the reasonable price	4.30	1.103	200
Overall evaluation about the transportation facilities	2.76	1.991	200
Overall evaluation about the promotional activities	2.98	1.990	200
Overall evaluation about the credit facilities	2.46	1.692	200
Overall evaluation about the technical facilities	2.30	1.504	200
Overall evaluation about the delivery in time	3.02	1.959	200

Table-2: Descriptive Statistics of the Competitive Factors of Two Companies Separately

Factors	Mean		Std. Deviation		Analysis N
	SC	CC	SC	CC	
Overall evaluation about product quality	4.36	2.76	0.48	0.81	100
Overall evaluation about product availability	4.84	1.20	0.36	0.40	100
Overall evaluation about the weight	4.84	2.84	0.36	1.41	100
Overall evaluation about the packaging	4.76	2.32	0.42	1.38	100
Overall restriction about the repackaging	3.96	1.32	1.34	0.68	100
Overall evaluation about the reasonable price	4.76	3.84	0.42	1.35	100
Overall evaluation about the transportation facilities	4.52	0	1.30	0	100
Overall evaluation about the promotional activities	4.96	0	0.19	0	100
Overall evaluation about the credit facilities	3.92	0	1.20	0	100
Overall evaluation about the technical facilities	3.60	0	1.06	0	100
Overall evaluation about the delivery in time	4.92	0.27	1.12	0.59	100

Table-3: Correlation Matrix of the Competitive Factors of Two Companies

(PQ= product quality, PA= product availability, PW= product weight, PP= packaging, PR= repackaging, RP= reasonable price, PT= transportation facilities, PPA= promotional activities, PC= credit facilities, TC= technical facilities, DT= delivery in time)

		PQ	PA	PW	PP	PR	RP	PT	PPA	PC	TC	DT
Correlation	PQ	1.000	0.807	0.689	0.759	0.624	0.290	0.683	0.769	0.649	0.673	0.790
	PA	0.807	1.000	0.714	0.804	0.819	0.373	0.857	0.975	0.832	0.894	0.965
	PW	0.689	0.714	1.000	0.907	0.512	-0.058	0.605	0.695	0.576	0.571	0.701
	PP	0.759	0.804	0.907	1.000	0.607	-0.035	0.662	0.764	0.638	0.636	0.772
	PR	0.624	0.819	0.512	0.607	1.000	0.444	0.759	0.771	0.701	0.767	0.775
	RP	0.290	0.373	-0.058	-0.035	0.444	1.000	0.344	0.415	0.324	0.333	0.383
	PT	0.683	0.857	0.605	0.662	0.759	0.344	1.000	0.882	0976	0.655	0.857
	PPA	0.769	0.975	0.695	0.764	0.771	0.415	0.882	1.000	0.862	0.869	0.969
	PC	0.649	0.832	0.576	0.638	0.701	0.324	0.976	0.862	1.000	0.649	0.840
	TC	0.673	0.894	0.571	0.636	0.767	0.333	0.655	0.869	0.649	1.000	0.851
	DT	0.790	0.965	0.701	0.772	0.775	0.383	0.857	0.969	0.840	0.851	1.000
Sig.(1-tailed)	PQ		0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
	PA	0.000		0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
	PW	0.000	0.000		0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
	PP	0.000	0.000	0.000		0.000	0.000	0.000	0.000	0.000	0.000	0.000
	PR	0.000	0.000	0.000	0.000		0.000	0.000	0.000	0.000	0.000	0.000
	RP	0.000	0.000	0.000	0.000	0.000		0.000	0.000	0.000	0.000	0.000
	PT	0.000	0.000	0.000	0.000	0.000	0.000		0.000	0.000	0.000	0.000
	PPA	0.000	0.000	0.000	0.000	0.000	0.000	0.000		0.000	0.000	0.000
	PC	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000		0.000	0.000
	TC	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000		0.000
	DT	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	

Table-4: KMO and Bartlett’s Test of the Competitive Factors of Two Companies

Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		0.793
Bartlett’s Test of Sphericity	Approx. Chi-Square	3798.568
	df	55
	Sig.	0.000

Figure-1: Scree Plot of the Competitive Factors of Two Companies

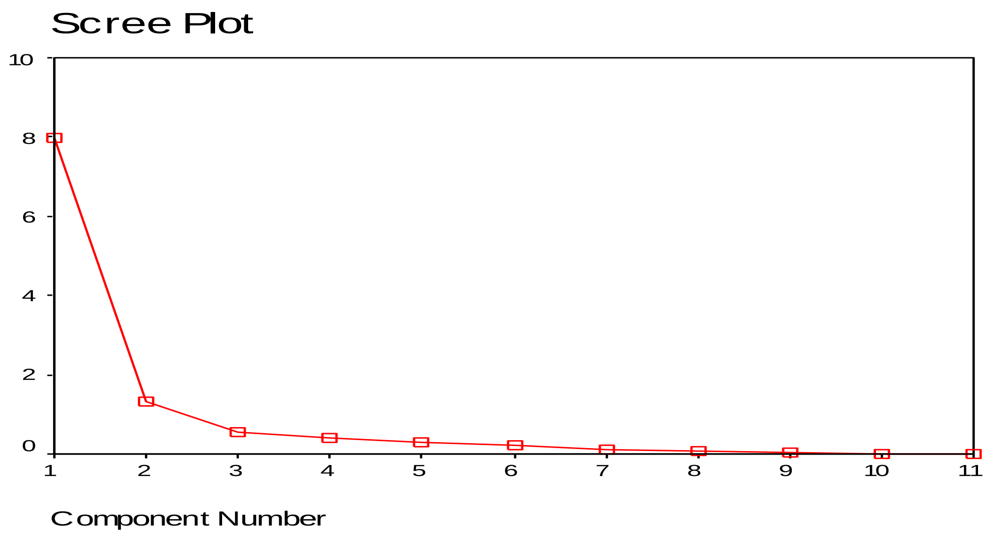

Table-5: Total Variance Explained of the Competitive Factors of Two Companies

Component	Initial Eigenvalues			Extraction Sums of Squared Loadings			Rotation Sums of Squared Loadings		
	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
1	7.986	72.597	72.597	7.986	72.597	72.597	6.989	63.537	63.537
2	1.324	12.033	84.630	1.324	12.033	84.630	2.320	21.093	84.630
3	0.551	5.009	89.639						
4	0.419	3.806	93.444						
5	0.283	2.574	96.019						
6	0.237	2.152	98.171						
7	9.314E-02	0.847	99.018						
8	5.578E-02	0.507	99.525						
9	2.835E-02	0.258	99.783						
10	1.440E-02	0.131	99.913						
11	9.515E-03	8.650E-02	100.000						

Extraction Method: Principal Component Analysis.

Table-6: Component Matrix[a] of the Competitive Factors of Two Companies

	Component	
	1	2
Overall evaluation about product quality	0.838	-0.111

Overall evaluation about product availability	0.983	2.972E-02
Overall evaluation about the weight	0.764	-0.531
Overall evaluation about the packaging	0.832	-0.481
Overall restriction about the repackaging	0.837	0.226
Overall evaluation about the reasonable price	0.367	0.843
Overall evaluation about the transportation facilities	0.901	9.940E-02
Overall evaluation about the promotional activities	0.974	7.684E-02
Overall evaluation about the credit facilities	0.877	9.720E02
Overall evaluation about the technical facilities	0.859	9.100E-02
Overall evaluation about the delivery in time	0.968	4.459E-02

Extraction Method: Principal Component Analysis

a. 2 component extracted

Table-7: Reproduced Correlations of the Competitive Factors of Two Companies

Extraction Method: Principal Component Analysis

a. Residuals are computed between observed and reproduced correlations. There are 15(27.05%) snon-redundant residuals with absolute values greater than 0.05

b. Reproduced communalities

		PQ	PA	PW	PP	PR	RP	PT	PPA	PC	TC	DT
Reproduced Correlation	PQ	0.715[b]	0.821	0.699	0.750	0.677	0.215	0.745	0.808	0.725	0.710	0.807
	PA	0.821	0.967[b]	0.735	0.803	0.830	0.386	0.889	0.960	0.865	0.847	0.953
	PW	0.699	0.735	0.866[b]	0.891	0.519	-0.167	0.636	0.703	0.619	0.608	0.716
	PP	0.750	0.803	0.891	0.923[b]	0.587	-0.100	0.702	0.773	0.683	0.671	0.783
	PR	0.677	0.830	0.519	0.587	0.752[b]	0.498	0.777	0.832	0.756	0.740	0.820
	RP	0.215	0.386	-0.167	-0.100	0.498	0.845[b]	0.415	0.422	0.404	0.392	0.393
	PT	0.745	0.889	0.636	0.702	0.777	0.415	0.822[b]	0.886	0.801	0.784	0.877
	PPA	0.808	0.960	0.703	0.773	0.832	0.422	0.886	0.954[b]	0.862	0.844	0.946
	PC	0.725	0.865	0.619	0.683	0.756	0.404	0.801	0.862	0.779[b]	0.763	0.854
	TC	0.710	0.847	0.608	0.671	0.740	0.392	0.784	0.844	0.763	0.746[b]	0.836
	DT	0.807	0.953	0.716	0.783	0.820	0.393	0.877	0.946	0.854	0.836	0.939[b]
Residual[a]	PQ		-1.429E-02	-1.004E-02	8.524E-03	-5.284E-02	7.499E-02	-6.129E-02	-3.884E-02	-7.534E-02	-3.733E-02	-1.687E-02
	PA	-1.429E-02										
	PW	-1.004E-02										
	PP	8.524E-03										
	PR	-5.284E-02										
	RP	7.499E-02										
	PT	-6.129E-02										
	PPA	-3.884E-02										
	PC	-7.534E-02										
	TC	-3.733E-02										
	DT	-1.687E-02										