Supply Chain Elements that affects the retail sales of electronic goods in the Oman region

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Abstract

Oman has a decreasing ratio of oil revenues to total government revenues. The need is to open up the economy. Government of Oman has initiated many reforms aimed at opening the economy by opening key economic sectors. One such sector could be sale of white goods and consumer electronics. This paper churns out the factors that influence the sales in this sector by using a questionnaire containing questions about the electronic stores in the region. The critical importance of overall store atmospherics, product innovation/design, unconditional defective product return and manufacturers' status is highlighted in moving a customer favorably towards making a purchase. The sample survey had been administered to 120 customers chosen randomly, 60 from set one of Hyper Markets and 60 from specialized stores in Oman. The electronic stores can take a lesson from this work and address these factors to generate more revenues.

Keywords: consumer electronics store, sales, factor analysis, inbound/outbound supply chain, strategy, demography, product differentiation, location, procurement, hyper markets

1 INTRODUCTION

Gulf Cooperation Council (GCC) region has some of the fastest growing economies in the world. Oman is one of the major economies in this region having a very low population density. GCC region can boast of booms in their oil and natural gas revenues as well as boom in building and investment sector from the period 2002-2008 [1]. However, GCC region is criticized for programs with disparity, prone to crisis, weak vision for growth, lack of action-plans for consumer and investor confidence and long-term stability of the region [2].

Oman's limited oil reserves have been producing less oil in the recent years. This is a cause of worry as other sources of income like agriculture & local industries count for marginal amount of the country's exports. Government of Oman has initiated many reforms aimed at opening the economy by opening key economic sectors [1] .One such sector could be sale of white goods and consumer electronics. The sale of imported products in markets provides income for people in Oman. Since the sale of imported items is a major source of income for the Omani, the major segment remains trade of electronic goods. Almost all major business houses of Oman are involved in Consumer Electronic Business. Also, other business houses from other GCC countries like UAE also hold a strong presence in Oman Consumer electronics market. Besides above, Oman has traditional electronic dealers and distributors based in the wholesale markets catering to the upcountry markets and low cost customers. Retail of electronic goods is done primarily through major hyper markets where the footfall is for the consumers who primarily come for grocery or other necessity and buy electronics randomly. These stores are all product stores from grocery & garments to electronics. Retail sales are also done through exclusive electronic stores or power retailers. These are multi-brand electronic showrooms.

A questionnaire containing questions about the retail of electronic goods in the region was administered to customers in order to portray the importance of elements that affects the retail sales of electronic goods in the Oman region. This was done with an intention to find ways of bringing vibrancy in one of the key sectors of the Omani economy.

2 REVIEW OF LITERATURE

In a study of American Demography, Johnson (2005) states that though retailers have made a lot of changes in "how they sell". However, for consumers the only change is "where and how they shop" There has not been much change in "when they shop-or how much of their budget they spend". Also, disposable income of the natives of a place has also a large effect on the sales [3]. This can be evidenced by an example from Brazil-Brazil's retailers continue to turn in a strong performance, particularly those selling non-durables items as real disposable incomes continue to expand [4].

Sigurdsson, Foxall & Saevarsson (2010) investigated the effects of different prices of a target brand on consumers' relative buying behavior [5]. They found out that there is a need to examine all of the marketing mix factors, not only price. Analysis of retailer reputation and prices on a set of electronic products showed that online retailers with better reputation charged higher prices [6].

Williams, Everett & Rogol (2009) found out that both competent sales efforts and technological support are important for enhancing sales [7]. One efficient way to develop a differentiated SC strategy could be to combine different supply, manufacturing and distribution strategies into various SC solutions [8]. Todd (2008) tried to reason out the success of retailers such as Tesco, Best Buy, Wal-Mart and Amazon by finding out that these retailers used analytics and created value in their offering by product innovation and better pricing by optimizing their supply chains [9]. As per Sigué & Karray (2007) [10], increases in product sales following sales promotions are due to the following:

- *Cross-brand effects*- when the competitor's product is bought e.g. when Videocon and Sansui LCDs are sold at dirt cheap price during the festival season, people prefer to buy them instead of their favorite brands.

- *Cross-period effects*- stockpiling by established customers e.g. non-perishable food items will be stocked for the year's requirement.

- *Category expansion effects*- purchases from consumers who generally do not buy the product category e.g. a consumer buying manual gear Car would buy an automatic gear car, a person buying LCD TV will buy LED TV

However, these promotions only enhance short-term product sales [9]. Many of the businesses having the potential of doing well, fail to do so because of location reasons. Litz & Rajaguru (2008) provided specific guidance as to the type of location small firms might seek out - specifically, easily accessible positions at close distance to stable customers [11].

The supply chain can be broadly classified into three parts: upstream, internal and downstream [12], [13]. Firstly, *Upstream Supply Chain* that is mainly concerned with procurement of raw materials. It includes suppliers that could be manufacturers themselves. Major activities in this part of the supply chain are purchasing and shipping. Secondly, *Internal Supply Chain* that is mainly concerned with transforming the inputs obtained in upstream supply chain into outputs. In this part the major activities are material handling, inventory management, manufacturing and quality control. Finally, there is *Downstream Supply Chain* that is mainly concerned with the processes involved in delivering the finished products from internal supply chain to final customers. In this part the major activities are packaging, warehousing and shipping. For these activities many wholesalers and distributors are involved. The last three sections of the questionnaire of this paper addresses towards these issues.

3 RESEARCH METHODOLOGY

Primary data has been collected from the customers of electronic retail stores on parameter that acts as a trigger for making a purchase, in the following sections:

A. *Personal Factors- Demography-* Age, gender, yearly income, native country

B. *Store Properties-* The store's poise & environment, reputation of the store, behavior of the sales persons and varieties of items under a single roof

C. *Product Differentiation-* Cost of the product, quality of the product, innovation & design of the product, features of the product and value of the product

D. *Economic Reasons-* Discounts given on the MRP of the product, end of season sale/ happy day or happy hours/ summer sale etc and loans arranged by the seller (EMI)

E. *Location Reasons-* Location of the store, transportation of the goods from store to customer's place, time lag in distribution and time of actual order, warehousing location that stores products from manufacturer

F. *Reasons due to Inbound Supply Chain-* Manufacturer's procurement profile, manufacturer's country of origin, manufacturer's economic condition, amount of money the manufacturer spends on research

G. *Reasons due to Internal Supply Chain-* Process of manufacturing of the product, quality assurance of the product, product configuration, technology and allied issues

H. *Reasons due to Outbound Supply Chain-* After Sales Service, Guarantee and Warrantees; unconditional return of the product, in case defective; incentives (like, a bag with the laptop, a cover for the TV, a stabilizer for the AC etc.), free home-delivery and installation of the product

3.1 Data and data sources

The Major Hyper markets such as Carrefour, LULU, Safeer have been chosen for this survey where the footfall is for the consumers who primarily come for grocery or other necessity and buy electronics randomly. These stores are all product stores from grocery & garments to electronics. The second kinds of stores that we covered for the survey were exclusive electronic stores or Power retailers Like: Radio Shack, E Max & GENETCO electronic showrooms. These are multi-brand electronic showrooms. The sample survey had been administered to 120 customers chosen randomly, 60 from set one of Hyper Markets and 60 from specialized stores.

4 ANALYSIS

Out of the 123 respondents, 108 (88%) were male and 15 (12%) were females. The average age of the respondents was 33 with a minimum of 16 and a maximum of 61 years. The average yearly income of the respondents was 17514 Oman Rial with a minimum of 3120 Oman Rial and a maximum of 130000 Oman Rial. Figure 1 given below shows the distribution of the respondents by virtue of the country of origin. Most of the respondents were from India and Oman as respondents from these two countries constitute 75% of the sample.
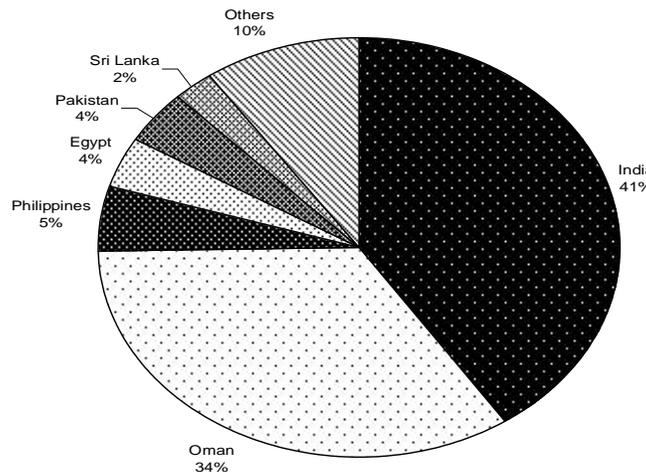

Figure 1: Showing distribution of respondents by country of origin.

Perceptions of the respondents on "Store Properties" shows that most of the respondents strongly agree (48.8%) with the fact that store's poise and environment should be good, it reputation should be good (45.5% agree) and behavior of the sales person should be good (60.2%, Table 1). Since the GCC region and in particular Oman has more of affluent customers, the percentage of respondents strongly agreeing on the economic reasons took a dip. As per the perceptions of the respondents on economic reasons, the reasons that got respondent's agreement are Discounts (47.2%), Sales/ Happy Hours (51.2%) and arrangement of

loans (36.6%, Table 2). The respondents were not too concerned with the location reasons as most of them indicated that store location (41.5%), delivery (44.7%) & time lag (43.9%) affect their buying decisions only sometimes. They are not much bothered about the warehousing location (28.5% Not Sure, Table 3). Perceptions of the respondents on product differentiation indicate that the most important variable in the eyes of the respondents is the "quality of the product" as 69.1% respondents have given it the first rank. However cost (56.1%) and features (53.7%) also received respondent's favour. Innovation & design (44.7%) and value (49.6%) were also not too far (Table 4). This seconds the findings of Todd (2008).

Table 1: Perceptions of the respondents on Store Properties (Section B)

	Questions	*Strongly disagree*	*Disagree*	*Neither agree nor disagree*	*Agree*	*Strongly agree*
1	The store's poise & environment should be good	0.8	2.4	9.8	38.2	48.8
2	Reputation of the store should be good		3.3	13	45.5	38.2
3	Behavior of the sales persons should be good.	0.8	2.4	9.8	26.8	60.2
4	Varieties of items under a single roof should be more		4.1	15.4	35.8	44.7

Table 2: Perceptions of the respondents on Economic reasons (Section D)

	Questions	*Strongly disagree*	*Disagree*	*Neither agree nor disagree*	*Agree*	*Strongly agree*
1	Discounts given on the RRP of the product	2.4	4.9	13	47.2	32.5
2	End of Season Sale/ Happy day or Happy Hours	0.8	1.6	11.4	51.2	35
3	Loans arranged by the seller (EMI)	0.8	11.4	29.3	36.6	22

Table 3: Perceptions of the respondents on location reasons (Section E)

	Questions	Mostly	Sometimes	Not Sure	Seldom	Never
1	Location of the store	38.2	41.5	8.9	5.7	5.7
2	Transportation of the goods from store to customer's place	33.3	44.7	10.6	5.7	5.7
3	Time lag in distribution and time of actual order	22	43.9	23.6	8.1	2.4
4	Warehousing location that stores products from manufacturer	29.3	22.8	28.5	5.7	13.8

Table 4: Perceptions of the respondents on product differentiation (Section C)

S.NO	Ranks	*1*	*2*	*3*	*4*	*5*
1	Cost of the product	56.1	22	7.3	6.5	8.1
2	Quality of the product	69.1	13	5.7	8.9	3.2
3	Innovation & design of the product	44.7	19.5	13	14.6	8.2
4	Features of the product	53.7	22	14.6	4.9	4.9
5	Value of the product	49.6	11.4	6.5	13.8	18.7

Perceptions of the respondents on buying preference due to reasons pertaining to inbound supply chain highlights an interesting reason i.e. the manufacturer's country of origin (66.7%). Respondents were neither bothered on the research done on the products by the manufacturer as almost 30% of the respondents gave it rank 4 nor bothered about the manufacturer's economic condition as almost 30% of the respondents gave it rank 4 (Table 5). Perceptions due to outbound Supply Chain show that again the quality assurance got 72.4% rank one. The other variable also caught respondent's attention as process (42.3%), product configuration

(46.3%) and technology (50.4%) got rank 1 in the respective manner from the respondents (Table 6). Perceptions due to outbound supply chain shows that all the reasons pertaining to the outbound supply chain were important for the buying behavior of the respondents as rank 1 was given to after sales service (88.6%) times, unconditional return (54.5%) times, incentives (51.2%) times and installation and free delivery (54.5%) times (Table 7).

Table 5: Perceptions of respondents on reasons due to Inbound Supply Chain (Section F)

	Ranks	*1*	*2*	*3*	*4*
1	Manufacturer's procurement profile	39.8	32.5	11.4	15.4
2	Manufacturer's country of origin	66.7	24.4	5.7	3.3
3	Manufacturer's economic condition	33.3	16.3	30.1	20.3
4	Amount of money the manufacturer spends on research	35.8	22	12.2	30.1

Table 6: Perceptions of respondents on reasons due to internal Supply Chain (Section G)

	Ranks	*1*	*2*	*3*	*4*
1	Process of manufacturing of the product	42.3	26	15.4	16.3
2	Quality assurance of the product	72.4	14.6	8.1	4.9
3	Product Configuration	46.3	22.8	13.8	17.1
4	Technology and allied issues	50.4	17.9	15.4	16.2

Table 7: Perceptions of respondents on reasons due to outbound Supply Chain (Section H)

	Ranks	*1*	*2*	*3*	*4*
1	After Sales Service, Guarantee and Warrantees	88.6	8.1	0.8	2.4
2	Unconditional return of the product, in case defective	54.5	21.1	7.3	17.1
3	Incentives like, a bag with the laptop, a cover for the TV, a stabilizer for the AC etc.)	51.2	22	17.1	9.8
4	Free Home-delivery and installation of the product	54.5	17.1	15.4	13

From many existing data analysis methods exploratory data analysis method was found suitable for this analysis. For exploratory data analysis, factor analysis has been used. This analysis is used to study correlations among a large number of interrelated variables. The variables are grouped into factors and the variables within a factor show higher correlations. A factor analysis was carried out on the sections B, D & E and then the meaning of each factor was interpreted to comment on the customer's perception about the electronic stores in the region.

The Kaiser-Meyer-Olkin measure of sampling adequacy, KMO statistic [14], [15] is 0.729, which means we can conclude that the degree of common variance among the variables is tolerable and the factors extracted will account for fare amount of variance.

Communalities, which is the proportion of the total variance of a variable accounted for by the common factors in a factor analysis were calculated. For the sections B, D & E, all the variables have communality above 0.337 with B3 having the highest communality (0.732) and D3 having the lowest (0.337). After analyzing the component matrix for sections B, D & E, the following factors were obtained:

Factor-1 (The store's poise & environment should be good, Reputation of the store should be good & Varieties of items under a single roof should be more) has 3 variables. Factor-2 is a combination of economic and location reasons (Discounts given on the RRP of the product, End of Season Sale/ Happy day or Happy Hours & Loans arranged by the seller (EMI); Location of the store, & Warehousing location that stores products from manufacturer) has 5 variables and Factor-3 is also a combination of economic and location reasons (Behavior of the sales persons should be good, Transportation of the goods from store to customer's

place &Time lag in distribution and time of actual order). These three factors are explaining almost 60% of the total variance.

A Scree plot shows the sorted eigenvalues, from large to small, as a function of the eigenvalue index (Figure 2). Eigenvalue is the standardized variance associated with a particular factor. The sum of the eigenvalues cannot exceed the number of variables in the analysis, since each variable contributes 1 to the sum of variances.
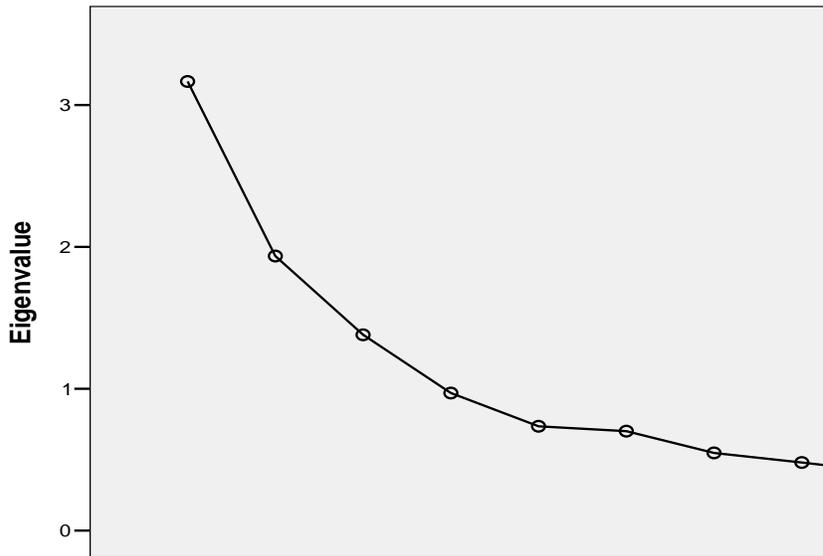

Figure 2: Scree Plot of factors from sections B, D & E

We carried out another factor analysis on the sections C, F, G and H and then interpreted the meaning of each factor to comment on the customer's perception about the electronic stores in the region. The KMO statistic here is 0.787, which means the factors extracted will account for fare amount of variance.

For the sections C, F, G & H, all the variables have communality above 0.496 with F2 having the highest communality (0.764) and C4 having the lowest (0.496). After analyzing the component matrix for sections C, F, G & H, the following factors were obtained:

Factor-1 (Innovation & design of the product, Manufacturer's economic condition & Unconditional return of the product, in case defective) has 3 variables. Factor-2 has 4 variables pertaining to the location reasons. This is a repeated factor from the previous analysis. Factor-3 (Manufacturer's procurement profile & Incentives like, a bag with the laptop, a cover for the TV, a stabilizer for the AC etc.) has 2 variables. Factor-4 (Manufacturer's country of origin & Process of manufacturing of the product) has 2 variables. Factor-5 (Quality assurance of the product & After Sales Service, Guarantee and Warrantees) has 2 variables. Factor-6(Quality of the product & Features of the product) has 2 variables and Factor-7 (Cost of the product, Value of the product, Amount of money the manufacturer spends on research, Product Configuration, Technology and allied issues & Free Home-delivery and installation of the product) has 6 variables. These seven factors are explaining almost 66% of the total variance.
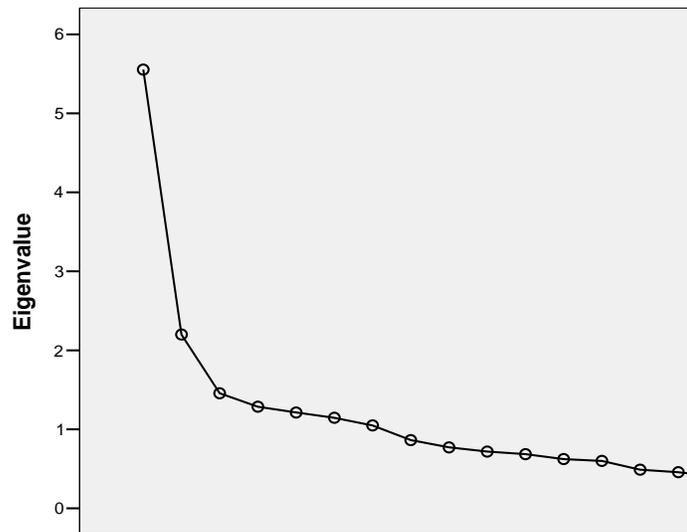
Figure 3: Scree Plot of factors from sections C, F, G & H

5 DISCUSSION

Since the data pertaining to sections B, D & E is ordinal data on a five point scale and data in sections C, F, G & H is rank data, they were analyzed separately and two analyses were done. In the first analysis, 3 variables of Factor-1 (store's poise & environment, reputation of the store & varieties of items under a single roof) are able to explain 28.7% of the variance. Factor-2 is a combination of economic and location reasons (discounts, sale/ happy hours &loans, location of the store, & Warehousing location) has 5 variables and is explaining 17.6% of the variance. Factor-3 (behavior of the sales persons, delivery & time lag) is explaining 12.5% of the variance. In the second analysis, Factor-1 (Innovation & design, manufacturer's economic condition & unconditional return of the product, in case defective) has 3 variables and is able to explain 26.4% of the variation. Factor-3 (manufacturer's procurement profile & incentives) has 2 variables and is making a contribution of 6.9% to the variation.

These results show some deviations from the frequencies that we have calculated in the previous section. The reason for this can be explained e.g. behavior of sales persons received very strong agreement (60%) from the respondents but it might not be contributing in the variation so it might not differentiate in the sales of the stores.

6 MANAGERIAL IMPLICATIONS OF THIS RESEARCH

The research has used data from the Oman region but it can be generalized in the sense that supply chain elements remain the same everywhere. This research has tried to segregate supply chain elements that have a bearing on the sales. These elements may vary from sector to sector but will not vary much for the retails formats considered.

The second important result is that sometimes frequencies can be misleading. The reason for this is explained in the previous section. A variable may show very strong agreement/ disagreement but it might not be able to segregate factors that are affecting sales at the stores. This research thus goes beyond descriptivist approach. The method of using supply chain elements in classifying the factors that have a bearing on sales thus can be generalized.

7 CONCLUSIONS

The results of the Factor Analysis bear out statistically the critical importance of overall store atmospherics (good environment, great reputation, attentive sales person and a full line product portfolio) in moving a customer favorably towards making a purchase. Discounts, sale/happy hours and loans, store location although very important, comes a very close second to the primary set of variables mentioned above. The criticality of these 2 sets may also be determined by the customer class (lower end - price sensitive versus

upper end, tech sensitive, but less price sensitive) who are making that purchase. Alongside, product innovation/design (in a fast paced technology driven industry), retailer facility of unconditional defective product return and manufacturers' status are key determining factors that drive brand-product choice. Evident also is the potential customers' lack of interest in issues like manufacturers' procurement profile and R&D spends. However, quality and country of origin are key markers in the purchase decision making process and is strongly correlated to perceived quality. The importance of after-sales service, predictably is as high as may be expected (for consumer electronics durables), coupled with free home delivery and installation of the product.

One can certainly not depend on resources one have. The need is to grow businesses that sustain. The need is to open up the economy and attract tourists that bring revenue to the country. Government of Oman has initiated many reforms aimed at opening the economy by opening key economic sectors. One such sector is trade of white goods and consumer electronics. This paper churns out the factors that trigger a purchase in the electronic goods at stores in the region. The stores can take a lesson for this and attract even outsiders by organizing "shopping festivals" like other members of the GCC. This will not only generate revenues in the long term but also solve the unemployment problem to a certain extent.

8 REFERENCES

[1] Saif Ibrahim (2009) 'The Oil Boom in the GCC Countries, 2002–2008: Old Challenges, Changing Dynamics'. *Carnegie PAPERS*, Carnegie Middle East Center, Number 15, March 2009.

[2] Saif Ibrahim and Choucair Farah. (2009) 'Arab Countries Stumble in the Face of Growing Economic Crisis'. *Web Commentary*, Carnegie Endowment for International Peace.

[3] Johnson Bradley. (2005) 'Where consumers shop changes, but when they do it stays the same'. *Advertising Age,* 76(47), 19.

[4] Brazil economy: Quick View - Retail sales growth edges up. (October, 2007). *EIU ViewsWire.*

[5] Sigurdsson, V., Foxall, G., & Saevarsson, H. (2010) 'In-Store Experimental Approach to Pricing and Consumer Behavior'. *Journal of Organizational Behavior Management,* 30(3), 234.

[6] Luo, W., & Chung, Q. (2010) 'Retailer reputation and online pricing strategy'. *The Journal of Computer Information Systems,* 50(4), 50-56.

[7] Williams, J., Everett, R., & Rogol, E.. (2009) 'Will the human factors of relationship selling survive in the twenty-first century?'. *International Journal of Commerce & Management,* 19(2), 158-175.

[8] Per Hilletofth. (2009) 'How to develop a differentiated supply chain strategy'. *Industrial Management + Data Systems,* 109(1), 16-33.

[9] Todd Greg. (2008) 'Retailers Using Analytics are Outperforming Rivals'. *DM Review,* 18(6), 35

[10] Sigué, S., & Karray, S. (2007) 'Price Competition During and After Promotions'. *Canadian Journal of Administrative Sciences,* 24(2), 80-93.

[11] Litz, R., & Rajaguru, G. (2008) 'Does Small Store Location Matter? A Test of Three Classic Theories of Retail Location'. *Journal of Small Business and Entrepreneurship,* 21(4), 477-486,488-492, 505.

[12] Turban, E., McLean, E. and Wetherbee, J., (2004), *Information Technology for Management*, 4th edition, John Wiley, and Sons Inc. (Asia).

[13] Turban, E., Rainer Jr. R.K. and Potter R. E. (2003), *Introduction to Information Technology*, 2nd edition, John Wiley, and Sons Inc. (Asia), 2003.

[14] Field, A.P. (2005) *Discovering Statistics using SPSS, 2nd* edition, Sage Publication.

[15] Johnson, R.A. & Wichern, D. W. (2001) *Applied Multivariate Statistical Analysis*, Third Edition, Prentice Hall of India Private Limited.