Case Study:

Formulation and Pilot project for increasing the TCI in F and V category in Hypermarket

Kulkarni Ramani and Kalyandurgmath Kavita*
Welingkar Institute of Management Development and Research, Mumbai, INDIA
*kavita.kalyandurgmath@welingkar.org

Abstract

The Indian retail industry has been evolving continuously from the years and the food and groceries contribute to the largest market share (66.3% as per IBEF report-June 2017) of all the products retailed in India. Over the years, retail stores have evolved from the local Kirana stores to the Hypermarket, the largest format of retail in India currently. A hypermarket is a one stop destination for all the needs of a typical Indian household and thus it is essential that a hypermarket keeps an extremely wide product range of all categories. Few of the main challenges that these hypermarkets face due to the large number of SKUs present are the shrinkage and the dumping of fruits and vegetables and generating a higher Total Commercial Income (TCI). This research paper discusses two important areas of concern to a Hypermarket.

1. To understand factors responsible for generating TCI [Total Commercial Income].

2. To increase the efficiency of Indent tool and analysis of historic data for identifying SKU's which are beneficial to increase TCI.

To ensure minimum dumping and shrinkage, it is highly important to do the indenting in the most accurate manner possible. And for an accurate indent to be given, the sales forecast also has to be accurate. The methods currently followed in many Hypermarkets are raw and inaccurate as they do not follow a scientific approach. The model uses analytics to forecast sales and indenting is done based on the sale predicted by the forecasting model.

Keywords: Total Commercial Income (TCI), Dump and shrinkage analysis, Stock Keeping Unit (SKU), Indent, OLAP cube, Scan Margin, Rate of Sales, Perceptual Map, sales contribution, realized sales, gross rupee margin, Cost of Goods Sold (COGS), Net sales, Inventory, Indent, Offers, Consumer preferences.

Introduction

The consumer demand for organic and local fruits and vegetables has increased consequentially over the past decade. In many cities in India, Fruits and Vegetables (F and V) sector is making its journey from the unorganized to an organized sector and often consumers face a challenge of availability of all the desired Fruits and Vegetables at one place. Also, the consumers are conscious of the quality of F and V where they want it to be pesticide free, with high quotient of freshness and value for money. Here the retail stores have a lot of opportunities to cater to these unfulfilled needs of the consumer.

A retail arm of well-known Conglomerate in the league of Fortune 500 companies ventured into food and grocery retail in the past decade presently operating more than 500 Supermarkets and 18 Hypermarkets. The company's mission is to offer a shopping experience which is unique to delight the customers. The company has a wide range of brands, which has helped to grow the members to more than 15 million; all of the customers enjoy top quality products. The business operation of the company strives to improve, support and sustain the effectiveness of its operations through a well-developed IT strategy and deployment of appropriate technology solution.

The company being one of the organized grocery retailers adopted NPS (Net Promoter Score) in India. NPS facilitates the tracking of customer's feedback by linking it through registered customer's mobile numbers. Customer satisfaction is the highest priority to the company. The Company follows Auto-Replenishment system which helps them to ensure the timely refilling of stock.

Review of Literature

Relevant Review of literature provides better navigation to the researchers to take the research work in desired direction. The review of the work done by past researchers in this field is presented under the themes: a) Consumer behavior about purchasing of FFV, b) Branding attributes of F and V and willingness to pay (WTP) for FFV brands, c) Different FFV retail formats and supply chain management and d) Factor analysis.

Consumer Behaviour about Purchasing of FFV: Indian consumers historically have mostly preferred raw and fresh foods over processed and packaged foods.[1,7,8] In the recent years, with the emergence of supermarket and hypermarket culture in India, the consumer preference of packaged food products has increased significantly.[9] There are huge opportunities for the retailers that can be encashed if they enter rural markets with suitable formats in order to serve the rural consumers. The major factors such as increased purchasing power of the Indian consumer in a booming economy, changing lifestyle, greater willingness to

experiment with new products and flavours, desire for convenience in packaged food products and an increase in the number of working women has led to the strong growth of consumption of packaged food products.[1]

Besides, urban consumers have increasingly responding to changes in quality food intake and becoming more conscious in terms of nutritional diet, health and food safety issues. Due to pre-disposable income and the changing lifestyle of working women, there is significant change in the buying and consumption patterns of urban consumers. In order to meet these emerging trends, retailing in India is undergoing unparalleled revolution with a number of national and multinational organizations trying to capture the huge and exponentially growing consumer market. This trend is continually rising in tier II cities as we see malls coming up with food items sold in organized sectors as compared to unorganized vegetable mandis.

Majority of the studies have examined that how consumer perception and preferences of quality of fruits and vegetables impact on their purchasing behavior and also the impact of socio-economic and behavioral factors on consumption of vegetables and fruits whereas only a fewer studies have been conducted on the influence of consumer lifestyles on their attitudes to quality aspects of F and V. During 1993, Grunert[2] first developed food related lifestyle (FRL) approach.

Later Perez-Cueto et al[6] came up with the model to describe customers according to the role that food plays in their lives. Nijmeijer et al[5] further probed to understand to what extent the food related lifestyle model adapted to include their personal values, their cooking skills and also their perceived food habits.

Johnson[4] states that while defining retailing it is necessary to recognize its distinct facts and orientation. Retailing involves i) Interpreting the needs of the consumers ii) Developing a good assortment of merchandise and iii) Displaying the items in an effective manner so that consumers find it attractive and help them easy to buy.

Research Gap: To study and derive the strategies to ensure the quality and freshness of Fruits and Vegetables from the different sources i.e. the direct store delivery (DSD), distribution center (DC) and the collection center (CC) which do not have same quality conformance on weekdays and weekends for a particular store. The main goal of the study is to increase Total Commercial Income of the store and at the same time ensure quality products to the customers.

Research Methodology

The research design is very well crafted for this study. The study is exploratory where the primary data is collected by conducting in-depth interviews of first-time customers and registered customers about why how and where they buy fruits and vegetables. Additionally, the customers billing data is extracted for solving the following objectives:

1. To understand factors responsible for generating TCI [Total Commercial Income].

2. To increase the efficiency of Indent tool and analysis of historic data for identifying SKU's which are beneficial to increase TCI.

The Total Commercial Income (TCI) depends upon three factors – Scan Margin, Dump and Shrinkage and Backend Cost. Scan Margin is the price that a retailer pays for an item and the price at which the retailer sells the item to the customer. Dump is the unacceptable standard of F and V for consumer consumption and shrinkage in case of F and V is the moisture loss. Backend Cost is the cost which includes the transportation, loading and unloading F and V, storage cost, etc. It is taken as constant (which is 3% for hypermarkets and 6% for supermarkets for this study).

Study area is a part of Banjara hills comprising of upper middle class of Hyderabad, Andhra Pradesh. Sampling Technique used is convenience sampling. To improve the TCI of the store, it was important to understand what the store offers and what the customer needs. 100 random customers who walked into the store were asked to fill in a questionnaire.

The answers of these customers were used to understand what the store needs to add/delete from their list. The primary objective of the entire research was to reduce the dumping in the fruits and vegetables section and thus help to improve the TCI (Total Commercial Income) of the store. The research was conducted in a Hypermarket with a dedicated fruits and vegetables section and doing a daily turnover of about Rs.1,90,000 in the category. The variables under study were classified into dependent variable, a total commercial income being one and the weekday, weekends were independent variables along with other demographic variables like age, gender, income level, occupation, location, marital status and education qualification.

Analysis and Findings

A Hypermarket being the largest format of retail ensures the maximum conversions, maximum stocks and the maximum dumping of fruits and vegetables. This helps conducting the study in the best possible manner. A competitive analysis was also done to study the reasons for a customer not purchasing from this particular hypermarket.

Perceptual Map: Perceptual map with respect to this hypermarket is a diagrammatic technique to visually display the perceptions of customers or potential customers.

Three different perceptual maps: Exotic Fruits and Vegetables, Familiar Vegetables, Familiar Fruits.

Attributes: Quality (low to high), Variety (limited to wide), around 100 customers were asked about their experience at this Hypermarket.

Perception of customers for the stores: Hypermarket under study, Ratnadeep, SPAR, Others [Big Bazaar, D-Mart, HyperCity, Reliance, Heritage Vijetha, online (big basket, gorfers) etc.]

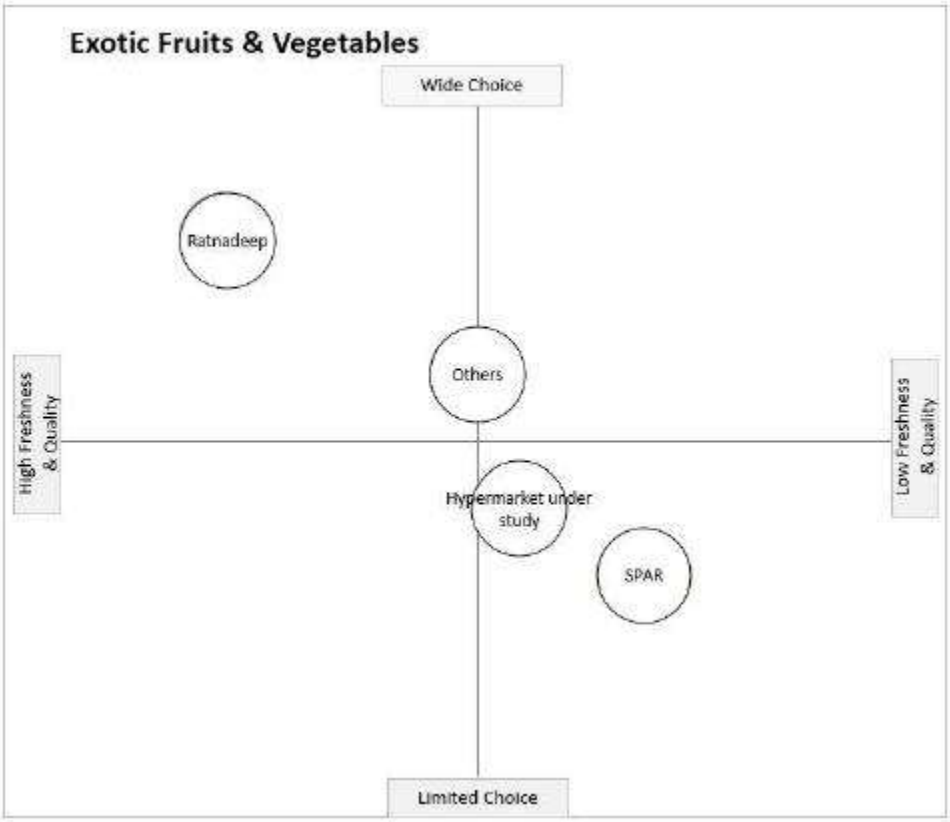

Figure 1: Perceptual map of Exotic fruits and Vegetables

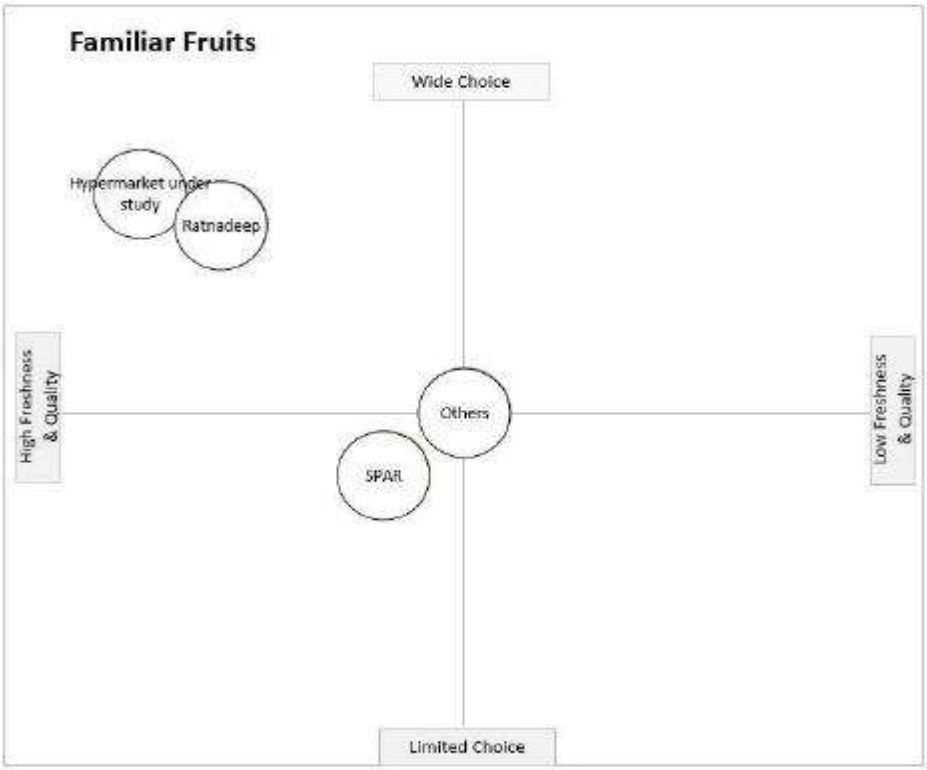

Figure 2: Perceptual map of Familiar Fruits

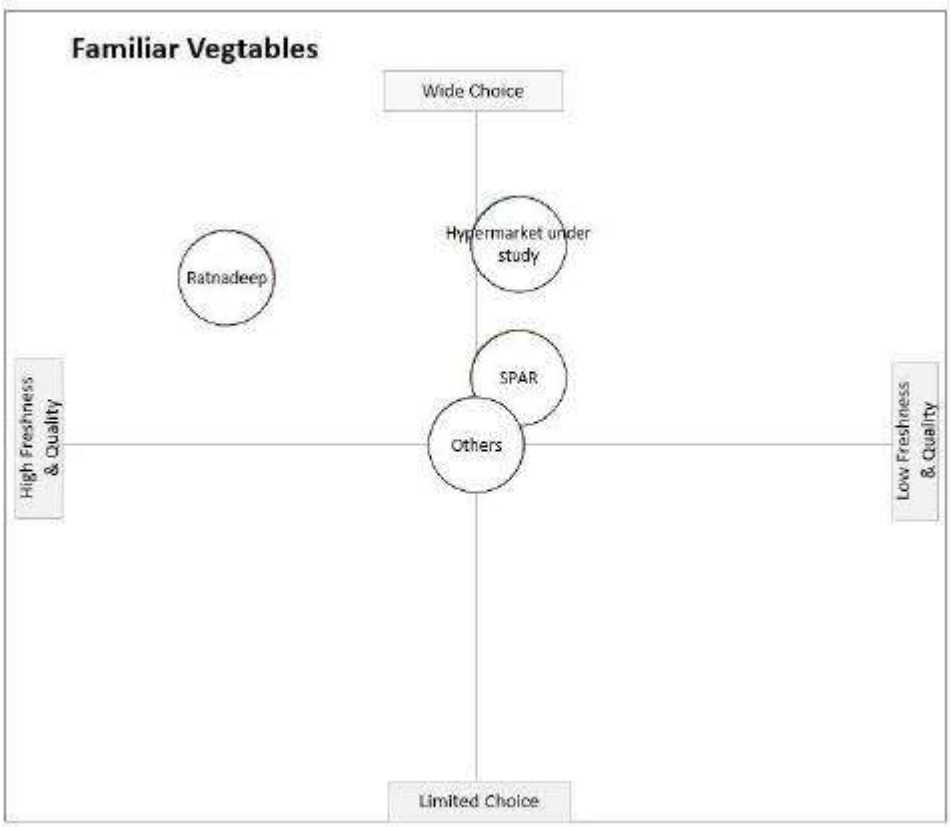

Figure 3: Perceptual map of Familiar Vegetables

TCI (Total Commercial Income) is given by formula:

TCI = SM – D and S – BE

where SM = Scan Margin, D&S: Dump and Shrinkage and BE = Back end cost.

The way in which TCI can be improved for a store is by either increasing the scan margin, or by decreasing dump and shrinkage and backend cost or both depending upon the most feasible option.

Factors affecting Dump and shrinkage of Fruits and Vegetables:

a. Inappropriate Indenting: D-2 Indenting is followed. For example: The indent for 12th June needs to be given on 10th June. The indent is based on several factors as mentioned above, but still there is a lot of scope for shifting the basis from experience based to more accurate facts and figures based. Appropriate indent can save lots of value loss to the company.

b. Improper handling of the Fruits and Vegetables at the Receiving area: The receiving area of the store is where all the SKUs are received, weighed, checked for Arrival Damages and then moved to the floor. The culling and refilling of F and V happens during the same time as that of receiving. Thus, the handling of crates of F and V is not given that much importance which also leads to damage stock.

c. Quality of the Fruits and Vegetables received: The quality of F and V is not consistent. At times it depends on the availability of the F and V in the marketplace. There are three sources of receiving F and V – DSD, DC, CC. The quality and quantity of F and V received from DC has to be accepted as it is. For DSD and CC only the good quality of F and V are accepted.

d. Handling by customers: Another reason for the increase in Dump and Shrinkage is due to the Indian culture of buying fruits and vegetables by their touch and feel. The more they are touched by hand, they get spoiled faster. This is a factor that is beyond the control of the store as it a customer preference that has to be catered to. The idea of packed fruits and vegetables was not really welcome by the customers and thus could not be continued on a larger scale.

TCI Improvement for Fruits and Vegetables:

a. Increasing TCI depends on the following factor - Total realized sales, Total COGS, Total scan margin %, Rate of Sales, Sales contribution, MSP, WAC, Dump %, Backend, TCI, stock out.

b. Scan Margin can be increased by increasing the MSP margin over WAC and also by increasing ROS and sales contribution of F and V by giving offers on some SKU's.

c. Here SKU hierarchy is first defined i.e. SKU's are first broadly divided into Families; Fruits and Vegetables which are further classified on the basis on its class and sub class.

d. Note: A proper mix of increasing MSP margin and increasing ROS and sales contribution is maintained within one family, class and sub class e.g.: for the varieties of brinjal SKU, on some SKU MSP margin needs to be increased while on some SKU offers need to be given to boost sales. Hence a proper mix is considered. This is done on the basis of ROS of a particular SKU.

e. After drilling down into family, class and sub class, finally 15 SKU's were identified on whose Scan Margin needs to be worked upon.

f. Note: Nothing much can be done on the scan margin of price sensitive SKU's e.g. Onion.

Following are the challenges faced by the company for giving the indent:

a. It becomes difficult to trace the pattern/trend in the quantities of fruits and vegetables, so as to order an ideal amount, because the sales pattern varies for Weekdays – Monday, Tuesday, Thursday, Friday; Wednesday – it is market day in which the prices are less and more promotional offers on weekends (Saturday and Sunday).

b. The sale of SKU's on each day makes it pretty difficult to analyze the exact indent quantity, no specific trend is observed.

c. The sale pattern differs with seasons and festive occasions, hence it is an arbitrary trend and concrete inference regarding consumer intake is challenging to identify.

d. Identifying trend of price sensitive SKU's (Potatoes, tomatoes, onions etc.) which is influenced by various social factors.

The statistical hypotheses were designed to solve the above challenges:

H01: The TCI of fruits and vegetables does not vary significantly on weekdays & weekends.

H02: There is no significant deviation of SKU's sales quantity on each day.

H03: Dump of fruits and vegetables does vary significantly on weekdays and weekends.

The primary objective of the entire research was to reduce the dumping in the fruits and vegetables section and thus help to improve the TCI (Total Commercial Income) of the store.

The research was conducted in a Hypermarket with a dedicated fruits and vegetables section and doing a daily turnover of about Rs. 1,90,000 in the category. A competitive analysis was also done to study the reasons for a customer not purchasing from this particular hypermarket.

Data extraction through OLAP cubes

About cube: The company uses OLAP Cubes for accessing data. An OLAP cube is a method of storing data onto a multidimensional form, generally for reporting purposes. In OLAP cubes, data (measures) are categorized by dimensions. OLAP cubes are often pre-summarized across dimensions to drastically improve query time over relational databases. Cube in general terms is a pivot table in excel sheet. Understanding, Accessing, Analyzing and Interpreting Cubes help to analyze the trends in business.

Types of cubes: Inventory, Offers, Purchase, Sales, Shrinkage. Amongst these cubes, Sales and Shrinkage cubes were used more extensively as far as the project scope is considered.

Factors considered while giving Indent:

a. Last week's sale

b. Last 4 week's same day average Sale: e.g. if the indent for 17th May is to be given, this is Wednesday, then last four Wednesday's i.e. 10th May, 3rd May, 26th April and 19th April average sale is considered

c. Inventory: This is the SOH column extracted every day.

d. Indents given for the last two days.

e. ROS: Rate of Sales This is given by the formula:

$$ROS = \frac{\text{Last 3 months SKU sales}}{\text{Total no. of days in month}}$$

f. No. of Days = Number of days of stock which is available.

g. Min and Max: This is the minimum and maximum amount of indent which can be given respectively. Currently these values are on experiential basis; however, there is scope for improvement in it. It can be extracted through a formula.

D and S Quantity, MSP value: This is the Dump and Shrinkage quantity, selling price and value of the respective SKU's.

Data Mining: The following fields were extracted from the OLAP cube – Sales quantity (weekdays, weekends, daily, weekly, monthly), price of SKU's, rate of sales, dump and shrinkage quantity, dump and shrinkage price, no. of days holding of stock, Item name and item description, thus the required fields from the customer billing was used for analysis.

Results

Hypothesis H01: The TCI of fruits and vegetables do not vary significantly on weekdays and weekends.

Case Apple Washington Red: The scan margin difference on Thursday and Sunday was 4.93% on an average.

Case Drumstick: The scan margin difference on Thursday and Sunday was 16.91% on an average.

From the above analysis, H01 is rejected and there is significant difference in TCI of fruits and vegetables on weekdays and weekends.

Hypothesis H02: There is no significant deviation of SKU's sales quantity on each day.

Case Cauliflower: The sales quantity differed by 339.29% for Thursday and Sunday.

The Null hypothesis H02 is rejected and there is significant deviation of SKU's sales quantity on each day.

Hypothesis 03: Dump of fruits and vegetables does vary significantly on weekdays and weekends.

Case Onion: The dump quantity varied significantly from a weekday and weekend i.e. 60%.

H03 is rejected and the dump quantity varied significantly from weekdays to weekends.

Dump analysis: With the help of the fields mentioned above, the, top 50 SKUs causing maximum dump (value wise) were analyzed for the month of April and May 2017. This was done on the basis of sales v/s dump. The motive was to understand the pattern of SKU sale day wise. With the research and analysis conducted, the effect was observed from 9th – 14th August 2017 (6 days) against 3rd - 8th August 2017 (6 days). There has been 22% decrease in Dump value percentage.

Scan Margin: Identifying SKU's that give higher scan margin and are beneficial. The fields which were used for analysis were - Scan Margin data, net sales, realized sales, COGS (Cost of goods sold), quantity, ROS (Rate of Sales). Dump contribution and Sale's contribution are considered. 15 SKU's were identified based on its classification as Fruits and Vegetables and its subsequent families and classes.

Also based on the scan margin (in %), realized sales (in Rs.), sales contribution (in Rs.) and Gross rupee margin (in Rs.) comparison of TCI of two stores (hypermarket) in Hyderabad cities were compared. And recommendation for increasing TCI in both the stores depends on the margin of Fruits and Vegetables of the respective stores.

Conclusion

From the study, it is evident that there is deviation in TCI which impacts the profit margin for fruits and vegetables on weekdays and weekends. The major factors directly have an impact on sales vs dump. If managed properly by training the staff, dumping can be reduced to an extent and TCI can be increased. Results prove that 22% Dump value is reduced for 6 days.

Recommendation

Since TCI majorly revolves around scan margin, dump and shrinkage, it was observed that training to the staff needs to be given on regular basis regarding the handling of F and V. The training would be combination of on the Job and Classroom training.

Receiving section: Readiness before vehicle, during Vehicle arrival, while unloading crates, while weighing and counting, during activities like Grading/Culling/Sorting.

Customer Interaction: Greeting the customers, interaction with regular customer, customer feedback at regular intervals (once or twice in a month), formulating a standard structure for all the customer feedback.

Stacking: Grooming and Hygiene of customer service support staff, implementation of Planogram, Floor Management, Stacking of SKU's, Grading or culling on floor, apt Product knowledge.

Dump reporting: SOP (Standard operating procedure) for dump reporting, maintenance of specific start time of reporting dump, every day.

References

1. Goyal Anita and Singh N.P., Consumer perception about fast food in India, an exploratory study, *British Food Journal*, **109(2)**, 182-195 **(2007)**

2. Grunert K.G., Towards a concept of food-related life style, *Appetite*, **21**, 151–155 **(1993)**

3. Grunert K.G., Bredahl L. and Brunso K., Consumer perception of meat quality and implications for product development in the meat sector, a review, *Meat Science*, **66**, 259-272 **(2004)**

4. Johney Johnson, Redefining retailing, a twenty-first Century perspective, *Small Enterprise Development Management and Extension Journal*, **31(2)**, 81-87 **(2004)**

5. Nijmeijer M., Worsely A. and Astill B., An exploration of the relationships between food lifestyle and vegetables consumption, *British Food Journal*, **106(7)**, 520-533 **(2004)**

6. Perez-Cueto F.J.A., Verbeke W., de Barcellos M.D., Kehagia Ol., Chryssochoidis G., Scholderer J. and Grunert K.G., Food-related lifestyles and their association to vegetable intake in women and men, *Journal of Nutrition Education of Marketing*, **36(1)**, 8-11 **(2010)**

7. Pysarchik D.T., Chung J.E. and Plank L.F., Western-style prepared foods blaze trail in Indian market, *Marketing News*, 16 August, 14 **(1999)**

8. Shaw A., Mathur P. and Mehrotra N.N., A study of consumers attitude towards processed food, *Indian Food Industry*, **47**, 29-41 **(1993)**

9. Silayoi Pinya and Mark Speece, Packaging and purchase decision, An exploratory study on the impact of investment level and time pressure, *British Food Journal*, **106(8)**, 607-628 **(2004)**.

(Received 19th December 2018, accepted 21st January 2019)