A study of factors impacting drivers of backend operations, for optimizing supply-chain of grocery and staples in organised retail Supermarkets under the Convenience Stores Format in the city of Bangalore.

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Introduction:

The retail sector has been at the helm of India’s growth story. The sector has evolved dramatically from traditional village fairs, street hawkers to resplendent malls and plush outlets, growing from strength to strength. According to the Indian Council for Research on International Economic Relations (ICRIER), India is the seventh-largest retail market in the world, and was expected to grow at a CAGR of over 13% till FY12, but has actually grown at the rate of 14.86% . CARE Research expects the Indian retail industry to grow at a CAGR of 14.8% during FY12-15.

Retail and wholesale trade is the single largest component of the services sector in terms of contributions to the Gross Domestic Product and at 15%. It is the largest contributor after Agriculture. As per press release of Reuters of May, 2011, it is expected to rise to 22%. Retail employs about 7% of the total work force. The Retail Industry comprises of Organised and un-organised sectors. Organised retailing refers to trading activities undertaken by licensed retailers, which are those who are registered for Sales tax, Income tax etc. These include corporate backed hypermarkets and retail chains, and also privately owned large retail businesses.

According to the “2012 outlook India retail”, report even though the income is likely to be depreciated due to inflation and high interest rates, the retail market sales is estimated at $540 billion and the share of organised retail will be around 5%.traditional retail is growing at the rate of 10% and modern retail at the rate of 25%. In fact larger format convenience stores and supermarkets contributed to 4% of organised retail in 2010.

Currently, food retail Accounts for a large chunk of retail at 63% and requires special focus and attention. India is characterized by a high degree of fragmentation with street markets and convenience stores (kiranas) accounting for more than 96% of retail business. There are over 10 million outlets, 96% of them are very small with an area of less than 500 Square feet. Organised retail is still at nascent stage in India and therefore Indian companies are grappling with many challenges and experimenting with many formats in retail

Though there are models on different components of supply chain and retail, Indian companies will certainly benefit from getting a deeper insight into back end operations for optimizing supply chain.

The aim of this study is to understand the drivers and factors influencing the back end operations in the area of supply chain efficiencies, particularly grocery and staples in the convenience stores format.

Keywords: organized retail, Supermarket, Convenience stores, grocery, supply chain.

Reviews of Literature:

More than 65% of the Retail is skewed towards Grocery, food, hence, this study is restricted to these two segments.

Mittal,K.C and Anupama, P( 2010) in their study conducted in Punjab have come up with insights on retail purchase behaviour in diversity of demographics and geographic locations. This study gives insights on the influence of demography and geography on the variation in customers buying decisions. Dismal performance of organised retail in food and grocery has been attributed to blindly replicating western models .This study gives some indicators with regard to management of stock keeping units in the food and grocery segment.

Supply chain efficiencies starting from decision on the stock keeping units, procurement cost, Inventory Management and distribution have to be integrated and coordinated to have a robust back end. Effective supply chain management has become a potential way nowadays to improve
organisational performance through matching supply chain practices and competitive advantages in the competitive world.

Rajwinder, S, Sandhu, H.S, Metri, B.A. and Rajinder, K(2010) discuss the core of supply chain management practices and identify five secondary constructs viz., technology, supply chain speed, customer satisfaction, supply chain integration and four primary competitive advantage constructs viz., inventory management, customer satisfaction, profitability and customer base identification. Data was collected through survey method and using structural equation modeling aspects of logistics, inventory management as key factors for costs have been explained in organised retail. Article also explains the linkages in the agriculture sector and food processing relating to supply chain efficiencies and practices. Whenever we are analysing the supply chain model, Procurement and sourcing is one of the key factors.

Prasad, J.S and Aryasri, A.R (2008) elucidate the dynamics of customer relationship management in grocery and food buying and how the changing habits will emanate a shift from kiranias. The fast changing trends in lifestyles, food and eating habits of consumers have contributed largely to the growth and development of organised food and grocery retail formats in India. But, this sector is predominantly (99.2 percent) dominated by the traditional kirana stores, which have strong relationships with the customers for various technical and functional quality benefits extended to them. This posed a great challenge to the organised retailers for customer acquisition and retention of loyal customers in this fierce competition. This study seeks to investigate the influence of relationship marketing cornerstones viz., Customer Satisfaction, Trust, Commitment, Communication on Relationship Strength which further explore the affect on attitudinal outcomes like relationship quality and behavioral outcomes such as customer loyalty. The study further examines an influence of the relationship quality on customer loyalty. This study is purely based upon the primary data and necessary secondary data to reinforce the model. The findings from the study indicated that customer satisfaction has emerged as a significant factor followed by commitment and trust for managing relationship quality and customer loyalty. Various managerial and marketing implications are extensively discussed.

Joy, M (2006) in a comparative study on supply chain management between large food and grocery retailers, addresses key points in terms of leveraging efficient sourcing, Increasing stock turns, Farm management and innovative logistics solutions.

Chetan, Rajnish and Nidhi (2005) studied the food and grocery market channels and found that most of the food and grocery products reach to consumers through the traditional markets which are unorganised But the very fast changing trends in food and eating habits of consumers have contributed immensely to the growth of Western Retail format such as convenience stores, department stores, supermarkets, specialty stores and hypermarkets for various conspicuous reasons namely, demand, supply.

Joel, H., Steckel, Sunil, G, and Anirvan, B. (2004) examine the impact of interplay between shorter cycle times and shared point of sale information on the inventory management and cost efficiencies. Using an experimental design of ordering and shipping lag, this article explores the bullwhip effect, effect of shorter cycle on inventory costs and looks at possibility of optimality bench marks for decision maker using the sternman mental model.

For Grocery Key Drivers which will be considered are: Sourcing, Procurement cost, private label, logistics.

Research Methodology:
Problem statement: Indian organized retail is still in nascent stage and supply chain is still not efficient. There are many models for managing supply chain, but it is difficult to decipher as to which model is appropriate in the Indian context for convenience stores format. This study focuses on the grocery segment of supply chain in convenience stores format as more than 63% of the retail is in food and grocery, by analyzing data of more than seventy stores of two companies in the organised sector representing convenience stores format.

Objective of the study:
- To identify, understand and analyse key drivers of backend operations.
• To determine the relation between various factors influencing back end grocery and staples weighted average margin.
• To explore influence of stock keeping units, sales total, sales quantity total, cost of procurement, warehouse cost and secondary freight on grocery and staples weighted average margin
• To evolve a optimization framework for back end grocery and staples supply chain.

Data collection: Primary data collected through schedules method using Cost templates for key drivers to capture present costs. In depth interviews with Experts was conducted to collect data on supply chain and other Drivers. Secondary data was collected through Journals, newspaper reports & articles, Government policy declarations, internet and other consultancy firm, Industry association reports (Assocham, Ficci, Indian Retail association) were referred for collecting secondary data.

Sample size and techniques
a. Sample size considered was two urban Retailers operating Distribution centres catering to a minimum of 40 to 50 outlets each in the city of Bangalore.
b. Purposive sampling for Distribution centers for back end operations having a minimum of 50000 to 100000 sq.ft.(Single or distributed)
c. Purposive sampling of a minimum of 15 representative Retail outlets from the population of 60 outlets to understand the linkage between back end and front end operations
d. Research was conducted across urban retailers in the city of Bangalore

Tools Adopted for the Study
a. Created data observation sheets for all the key parameters for both back end and front end operations, in addition to unstructured in depth interview with expert group. However the protocol for the interview was predetermined to capture all key data and elements and involved some qualitative aspect.

Theoretical Framework
As there are not many literature available on integrated business models in organised retail, inferences and frame work have been derived by looking at aspects of supply chain/back end separately and front end operations separately. Overall retail process was also studied in addition to new strategic perspectives for retail model in Indian retail. Apart from this insights were garnered through focussed group interviews with consultants, practitioners and experts. Study was then divided into back end and front end operations and was further sub divided as follows:

Back end Grocery Process Analysis

Sourcing
(Independent variables)
1) Stock keeping units
2) Cost
3) Selling price

(Independent variable)
1) Over all gross margin percentage
2) Per kg margin for key SKUS

Sales data/ cost of goods data/ for One year of approximately 50 stores were taken in Bangalore and divided by 12 to arrive at monthly average for per kg allocation. Stock keeping units were identified broadly under cereals, atta, pulses, spices, dry fruits, oil, ghee and sugar.

Hypothesis to be tested:
Hypothesis-1
Ho: There is no significant relation between factors influencing Backend Grocery and Staples weighted average margin, and Stock keeping units, sales total and sales quantity
H1: There is significant relation between factors influencing Backend Grocery and Staples weighted average margin, and Stock keeping units, sales total and sales quantity

Hypothesis-2
Ho: There is no significant relation between factors influencing Backend Grocery and Staples weighted average margin, and cost of procurement, weight, warehouse cost and manpower

H1: There is significant relation between factors influencing Backend Grocery and Staples weighted average margin, and cost of procurement, weight, warehouse cost and manpower

Hypothesis-3

Ho: There is no significant relation between factors influencing Backend Grocery and Staples weighted average margin, and inventory, processing and secondary freight.

H1: There is significant relation between factors influencing Backend Grocery and Staples weighted average margin, and inventory, processing and secondary freight.

Hypothesis-4

Ho: There is no significant relation between factors influencing Backend Grocery and Staples weighted average margin, and weighted average margin.

H1: There is significant relation between factors influencing Backend Grocery and Staples weighted average margin, and weighted average margin.

Hypothesis-5

Ho: There is no significant influence of stock keeping units, sales total ,sales quantity total, cost of procurement, warehouse cost and secondary freight on weighted average margin

H1: There is significant influence of stock keeping units, sales total ,sales quantity total, cost of procurement, warehouse cost and secondary freight on weighted average margin

Observations and findings of testing of hypothesis-1:
Factors and drivers of retail business as derived were run through a correlation matrix and the correlation were derived for grocery and staples for entire back end operation and few aspects of front end operations. Thereafter multiple linear regression was deployed to observe the significance of each independent variable and their intra and inter relation with the dependent variable.

### Table 1 Correlations of factors influencing Backend Grocery and Staples weighted average margin, with Stock Keeping units, sales total and sales quantity

<table>
<thead>
<tr>
<th>Correlations</th>
<th>Factors</th>
<th>Stockkeepingunits</th>
<th>SalesTotal</th>
<th>SalesQuantityTotal</th>
</tr>
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<tr>
<td>Pearson Correlation Stockkeepingunits</td>
<td>1</td>
<td>-.139</td>
<td>-.063</td>
<td></td>
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<tr>
<td>Sig. (2-tailed)</td>
<td>.000</td>
<td>.009</td>
<td></td>
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<tr>
<td>N</td>
<td>1718</td>
<td>1718</td>
<td>1718</td>
<td></td>
</tr>
<tr>
<td>Pearson Correlation SalesTotal</td>
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<td>1</td>
<td>.796</td>
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</tr>
<tr>
<td>Sig. (2-tailed)</td>
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<tr>
<td>Pearson Correlation SalesQuantityTotal</td>
<td>-.063</td>
<td>.796</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>Sig. (2-tailed)</td>
<td>.009</td>
<td>.000</td>
<td></td>
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<tr>
<td>N</td>
<td>1718</td>
<td>1718</td>
<td>1718</td>
<td></td>
</tr>
<tr>
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<td>.799</td>
<td></td>
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<tr>
<td>Sig. (2-tailed)</td>
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<td>.000</td>
<td>.000</td>
<td></td>
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<tr>
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<td>1718</td>
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<td></td>
</tr>
<tr>
<td>Pearson Correlation Kgs</td>
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<td>.833</td>
<td>.852</td>
<td></td>
</tr>
<tr>
<td>Sig. (2-tailed)</td>
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<td>.000</td>
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<td>1718</td>
<td>1718</td>
<td>1718</td>
<td></td>
</tr>
<tr>
<td>Pearson Correlation Warehousecostt1</td>
<td>-.148</td>
<td>.833</td>
<td>.852</td>
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<tr>
<td>Sig. (2-tailed)</td>
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<td>Pearson Correlation Manpower1</td>
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<td>.730</td>
<td>.808</td>
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<td>N</td>
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<td>1718</td>
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<td></td>
</tr>
<tr>
<td>Pearson Correlation Inventory1</td>
<td>-.148</td>
<td>.833</td>
<td>.852</td>
<td></td>
</tr>
</tbody>
</table>
There is a significant negative relation between stock keeping units with sales total. There is a significant negative relation between cost of procurement with stock keeping units.
There is a significant relation between Kgs with sales total and sales quantity.
There is a significant negative relation between warehouse cost with stock keeping units. There is a significant relation between warehouse cost with sales total and sales quantity. There is a significant negative relation between inventory with stock keeping units. There is a significant relation between cost of procurement with sales total and sales quantity. There is a significant negative relation between warehouse cost with stock keeping units. There is a significant relation between warehouse cost with sales total and sales quantity. There is a significant negative relation between inventory with stock keeping units. There is a significant relation between warehouse cost with stock keeping units. There is a significant negative relation between inventory with sales total and sales quantity. There is a significant negative relation between processing with stock keeping units. There is a significant relation between processing with sales total and sales quantity. There is a significant negative relation between secondary freight with stock keeping units. There is a significant relation between secondary freight with sales total and sales quantity.
Hence Null hypothesis is rejected and alternate hypothesis is accepted.ie there is significant relation between factors influencing Backend Grocery and Staples weighted average margin, and Stock keeping units, sales total and sales quantity.

Observations and findings of testing of hypothesis-2:
Table 2 Correlations of factors influencing Backend Grocery and Staples weighted average margin, with cost of procurement, Kgs, warehouse cost and manpower

<table>
<thead>
<tr>
<th>Factors</th>
<th>CostOfProcurementTotal</th>
<th>Kgs</th>
<th>WarehouseCost1</th>
<th>Manpower1</th>
</tr>
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<td>.820**</td>
<td>.709</td>
</tr>
<tr>
<td></td>
<td>Sig. (2-tailed)</td>
<td>.000</td>
<td>.000</td>
<td>.000</td>
</tr>
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<td></td>
<td>N</td>
<td>1718</td>
<td>1718</td>
<td>1718</td>
</tr>
<tr>
<td>Kgs</td>
<td>Pearson Correlation</td>
<td>.820**</td>
<td>1**</td>
<td>.983**</td>
</tr>
<tr>
<td></td>
<td>Sig. (2-tailed)</td>
<td>.000</td>
<td>.000</td>
<td>.000</td>
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<tr>
<td></td>
<td>N</td>
<td>1718</td>
<td>1718</td>
<td>1718</td>
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<tr>
<td>WarehouseCost1</td>
<td>Pearson Correlation</td>
<td>.820**</td>
<td>1.000**</td>
<td>.983**</td>
</tr>
<tr>
<td></td>
<td>Sig. (2-tailed)</td>
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<td>.000</td>
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<td></td>
<td>N</td>
<td>1718</td>
<td>1718</td>
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</tr>
</tbody>
</table>
There is a significant relation between cost of procurement with kgs, warehouse cost and manpower. There is a significant relation between kgs with warehouse cost and manpower. There is a significant relation between inventory with cost of procurement, kgs warehouse cost and manpower. There is a significant relation between processing with cost of procurement with kgs warehouse cost and manpower. There is a significant relation between secondary freight with cost of procurement, kgs, warehouse cost and manpower. Hence null hypothesis is rejected and alternate hypothesis is accepted. i.e., there is significant relation between factors influencing Backend Grocery and Staples weighted average margin, and cost of procurement, weight, warehouse cost and manpower.

Observations and findings of testing of hypothesis-3:

**Table 2 Correlations of factors influencing Backend Grocery and Staples weighted average margin, inventory, processing and secondary freight**

<table>
<thead>
<tr>
<th></th>
<th>Pearson Correlation</th>
<th>Inventory1</th>
<th>Processing1</th>
<th>Secondaryfreight1</th>
</tr>
</thead>
<tbody>
<tr>
<td>Manpower1</td>
<td>.709**</td>
<td>.983**</td>
<td>.983**</td>
<td>1**</td>
</tr>
<tr>
<td>Sig. (2-tailed)</td>
<td>.000</td>
<td>.000</td>
<td>.000</td>
<td></td>
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<tr>
<td>N</td>
<td>1718</td>
<td>1718</td>
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<td>1718</td>
</tr>
<tr>
<td>Inventory1</td>
<td>.820**</td>
<td>1.000**</td>
<td>1.000**</td>
<td>.983**</td>
</tr>
<tr>
<td>Sig. (2-tailed)</td>
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<td>.000</td>
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<td>1718</td>
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<td>1718</td>
</tr>
<tr>
<td>Processing1</td>
<td>.534**</td>
<td>.913**</td>
<td>.913**</td>
<td>.973**</td>
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<tr>
<td>Sig. (2-tailed)</td>
<td>.000</td>
<td>.000</td>
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<td>N</td>
<td>1718</td>
<td>1718</td>
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<tr>
<td>Secondaryfreight1</td>
<td>.534**</td>
<td>.913**</td>
<td>.913**</td>
<td>.973**</td>
</tr>
<tr>
<td>Sig. (2-tailed)</td>
<td>.000</td>
<td>.000</td>
<td>.000</td>
<td></td>
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<tr>
<td>N</td>
<td>1718</td>
<td>1718</td>
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</tr>
</tbody>
</table>

** Correlation is significant at the 0.01 level (2-tailed).

There is a significant relation between inventory with processing and secondary freight. There is a significant relation between processing with secondary freight. Hence, Null hypothesis is rejected and alternate hypothesis is accepted. i.e., there is significant relation between factors influencing Backend Grocery and Staples weighted average margin, and inventory, processing and secondary freight.
Observations and findings of testing of hypothesis-4:

Table 4 Correlations of factors influencing Backend Grocery and Staples weighted average margin, with weighted average margin.

<table>
<thead>
<tr>
<th>Factors</th>
<th>Pearson Correlation</th>
<th>Sig. (2-tailed)</th>
<th>N</th>
</tr>
</thead>
<tbody>
<tr>
<td>Stockkeepingunits</td>
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<tr>
<td>SalesTotal</td>
<td>.721**</td>
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<tr>
<td>SalesQuantityTotal</td>
<td>.459**</td>
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<tr>
<td>CostofprocurementTotal</td>
<td>.654**</td>
<td>.000</td>
<td>1718</td>
</tr>
<tr>
<td>Kgs</td>
<td>.550**</td>
<td>.000</td>
<td>1718</td>
</tr>
<tr>
<td>Warehousecost</td>
<td>.550**</td>
<td>.000</td>
<td>1718</td>
</tr>
<tr>
<td>Manpower</td>
<td>.514**</td>
<td>.000</td>
<td>1718</td>
</tr>
<tr>
<td>Inventory1</td>
<td>.550**</td>
<td>.000</td>
<td>1718</td>
</tr>
<tr>
<td>Processing1</td>
<td>.442**</td>
<td>.000</td>
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<tr>
<td>Secondaryfreight1</td>
<td>.442**</td>
<td>.000</td>
<td>1718</td>
</tr>
</tbody>
</table>

There is a significant negative relation between stock keeping units with weighted average margin. There is a significant relation between sales total with weighted average margin. There is a significant relation between sales quantity total with weighted average margin. There is a significant relation between cost of procurement with weighted average margin. There is a significant relation between Kgs with weighted average margin. There is a significant relation between warehouse cost with weighted average margin. There is a significant relation between manpower with weighted average margin. There is a significant relation between inventory with weighted average margin. There is a significant relation between processing with weighted average margin. There is a significant relation between secondary freight with weighted average margin.

Hence Null hypothesis is rejected and alternate hypothesis is accepted i.e., there is significant relation between factors influencing Backend Grocery and Staples weighted average margin, and weighted average margin.

Observations and findings of testing of hypothesis-5:

To analyse significance of Variables and Regression Model Fit, relation between variables and identify significant predictors a multiple linear regression was performed.
There is significant influence of various independent variables over dependent variable being weighted average margin contribution per unit as depicted in the model summary (Table 5) which accounts for 99.4% of the variance. Adjusted R square at .994 establishes the overall significance of the regression model.

- The Model accounts for 99.4% of the variance
- Conclusion adjusted R being at 99.4% explains the fit of the model to the data structure and is appropriate for the analysis.

The analysis of variance table gives summary (sums of squares and mean square statistics) of the variation accounted for by the prediction equation. Our main interest is in determining whether there is a statistically significant linear relation between the dependent variable and the independent variable(s) in the population.

The Sig. column provides the probability that the null hypothesis is true (i.e., no relationship between the independent and dependent variable).

As clearly depicted by ANOVA (table 6) there is statistically significant linear relation between independent variables and dependent variables and rejects the null hypothesis.

The significant predictors are: Stock keeping units, Sales Total, Cost of procurement Total and Secondary Freight
The first column contains a list of the independent variables plus the intercept \((Constant)\). The intercept is the value of the dependent variable when the independent variable is 0. The column labelled \(B\) contains the estimated regression coefficients we would use in a prediction equation. The **Standard Error** column contains standard errors of the regression coefficients. Betas are standardized regression coefficients and are used to judge the relative importance of each of several independent variables. The \(t\) statistics provide a significance test for each \(B\) coefficient, testing whether it differs from zero in the population. Stock keeping units, sales total, cost of procurement and secondary freight are significant and the equation of impact of change in any one unit on weighted average margin is derived below.

**Weighted average contribution margin per unit**
\[
= -0.023 + 0.007(\text{Stock keeping units}) + \text{Sales Total} (1.587E-005) - (5.621E-007) (\text{Sales Quantity Total}) - (1.587E-005)(\text{COGS Total}) - 0.337 (\text{Warehousehousecost1}) - 3.855(\text{Secondaryfreight1}) + e1
\]

To analyze the influence of stock keeping unit on weighted average margin, a multiple linear regression was performed. It was found that there was a significant influence of stock keeping units on weighted average margin \((p \text{ value} = .000)\) and hence null hypothesis is being rejected and alternative i.e. There is significant influence of stock keeping units on weighted average margin is accepted.

To analyze the influence of cost of procurement on weighted average margin, a multiple linear regression was performed. It was found that there was a significant influence of cost of procurement on weighted average margin \((p \text{ value} = .000)\) and hence null hypothesis is being rejected and alternative i.e. There is significant influence of cost of procurement on weighted average margin is accepted.

To analyze the influence of sales total on weighted average margin, a multiple linear regression was performed. It was found that there was a significant influence of sales total on weighted average margin \((p \text{ value} = .000)\) and hence null hypothesis is being rejected and alternative i.e. There is significant influence of sales total on weighted average margin is accepted.

To analyze the influence of sales quantity on weighted average margin, a multiple linear regression was performed. It was found that there was a significant negative influence of sales total on weighted average margin \((p \text{ value} = .127)\) and hence null hypothesis is being accepted and alternative is rejected i.e. There is no significant influence of sales quantity on weighted average margin is accepted.

To analyze the influence of warehouse cost on weighted average margin, a multiple linear regression was performed. It was found that there was no significant influence of sales total on weighted average margin \((p \text{ value} = .197)\) and hence null hypothesis is being accepted and alternative is rejected i.e. There is no significant influence of warehouse cost on weighted average margin is accepted.

To analyze the influence of secondary freight on weighted average margin, a multiple linear regression was performed. It was found that there was a significant influence of sales total on weighted average margin \((p \text{ value} = .000)\) and hence null hypothesis is being rejected and alternative i.e. There is significant influence of secondary freight on weighted average margin is accepted.

**Findings:**

**Back end grocery and staples**
1. It was observed that there was a significant negative relation between stock keeping units with sales total.
2. It was observed that there was a significant negative relation between cost of procurement and stock keeping units.
3. It was found that there was a significant relation between cost of procurement with sales total and sales quantity.
4. It was observed that there was a significant negative relation between kgs with stock keeping units.
5. It was found that there was a significant relation between kgs with sales total and sales quantity.
6. It was observed that there was a significant negative relation between warehouse cost with stock keeping units.
7. It was found that there was a significant relation between warehouse cost with sales total and sales quantity.
8. It was observed that there was a significant negative relation between manpower with stock keeping units.
9. It was found that there was a significant relation between manpower with sales total and sales quantity.
10. It was observed that there was a significant negative relation between inventory with stock keeping units.
11. It was found that there was a significant relation between inventory with sales total and sales quantity.
12. It was observed that there was a significant negative relation between processing with stock keeping units.
13. It was found that there was a significant relation between processing with sales total and sales quantity.
14. It was observed that there was a significant negative relation between secondary freight with stock keeping units.
15. It was found that there was a significant relation between secondary freight with sales total and sales quantity.
16. It was found that there was a significant relation between cost of procurement with kgs, warehouse cost and manpower.
17. It was found that there was a significant relation between kgs with warehouse cost and manpower.
18. It was found that there was a significant relation between warehouse cost and manpower.
19. It was found that there was a significant relation between inventory with cost of procurement, kgs warehouse cost and manpower.
20. It was found that there was a significant relation between processing with cost of procurement with kgs warehouse cost and manpower.
21. It was found that there was a significant relation between secondary freight with cost of procurement, kgs, warehouse cost and manpower.
22. It was found that there was a significant relation between cost of procurement with kgs warehouse cost and manpower.
23. It was found that there was a significant relation between inventory with processing and secondary freight.
24. It was found that there was a significant relation between processing with secondary freight.
25. It was observed that there was a significant negative relation between stock keeping units with weighted average margin.
26. It was found that there was a significant relation between sales total with weighted average margin.
27. It was found that there was a significant relation between sales quantity total with weighted average margin.
28. It was found that there was a significant relation between cost of procurement with weighted average margin.
29. It was found that there was a significant relation between kgs with weighted average margin.
30. It was found that there was a significant relation between warehouse cost with weighted average margin.
31. It was found that there was a significant relation between manpower with weighted average margin.
32. It was found that there was a significant relation between inventory with weighted average margin.
33. It was found that there was a significant relation between processing with weighted average margin.
34. It was found that there was a significant relation between secondary freight with weighted average margin.
35. It was found that there was a significant influence of stock keeping units on weighted average margin (p value = .000)
36. It was found that there was a significant influence of cost of procurement on weighted average margin (p value = .000)
37. It was found that there was a significant influence of sales total on weighted average margin (p value = .000)
38. It was observed that there was no significant influence of sales total on weighted average margin (p value = .127)
39. It was observed that there was no significant influence of sales total on weighted average margin (p value = .197)
40. It was found that there was a significant influence of sales total on weighted average margin (p value = .000)

Hence stock keeping units, cost of procurement and secondary freight emerged as significant drivers to be controlled for efficiency and optimisation link.

**Conclusions:** In the back end grocery and staples supply chain efficiencies in terms of cost of procurement, stock keeping units and secondary freight emerge as significant in addition to optimising category mix in line with customer preference. The study highlights the imperative of evolving efficient supply chain models, backward and forward integration of supply chain and further provides insights into few linkages of front end operations in organised retail with back end operation. Apart from this independent variables stock keeping units, cost of procurement, secondary freight has significant inter play and establishes them as key drivers and factors in the back end.

**Suggestions:** Invest in back end infrastructure and establish standard operating procedures for sourcing and procurement. Create modules for each aspect and link it to the standard business framework. Separate module can be created for management of stock keeping units, cost of procurement and associated supply chain costs and efficient supply chain deliverables. This can create a robust mechanism for backward integration and enable further research for creating optimization models in terms of sales mix, bringing down direct and indirect costs to improve stock keeping unit level margin. Though this study is confined to only the convenience stores discount format in the organised retail, it has opened up a new vista of research into the subject. Creating evolving supply chain model framework and expanding them to other formats of organised retail can throw up newer ideas, innovations and efficient models. This research will hopefully initiate more exhaustive research which will have a cascading effect on the industry as a whole.

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