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Supply chain analytics on inventory management on small firms across Hyderabad

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ABSTRACT

Small firms are mostly into retail operations in the very first stage of development. Inventory management describes the way resources are handled in the production process. Inventory management is a part of the supply chain which involves a sequence of activities starting from procurement of raw materials from suppliers and ending with the distribution of products to the end customers. As inventory management is a subset of the supply chain, efficient management of inventory reduces the time taken for the movement of materials for operations. A study on Supply Chain Analytics on Inventory Management on Small Firms across Hyderabad. Efficient implementation of inventory management with respect to the supply chain helps organizations reduce the cost of operations and gain a competitive advantage in the industry.

Keywords: *Value-Added Services, Positive Feedback, Customer Loyalty*

1. INTRODUCTION

Small firms are the organizations, partnerships or proprietorships which involves fewer employees and less revenue when compared to a regular sized business or corporation. Small firms are mostly into retail operations which are in the very first stage of development. Small businesses such as convenience and grocery stores, restaurants, tradespeople and small-scale manufacturing companies. Self-employment and startups also belong to this particular category. In India businesses with investment less than ten crore rupees and annual revenue less than fifty crore rupees are included in this category. Franchises of huge corporations can be included in this category if they are satisfying the above-mentioned capital and revenue levels. They take the advantage of economies of scale to obtain quick and sustained growth. At present 97% of the businesses are termed as small scale which involves a quarter of micro businesses, a 10% of small businesses and 62% of self-employed. These small businesses operate on a shoestring budget and depend on labor to cater a small community or area

Inventory management describes the way resources are handled in the production process. Inventory management is a part of supply chain which involves a sequence of activities starting from procurement of raw materials from suppliers ending with the distribution of products to the end customers. Controlling the stock is crucial for any firm to meet the demands efficiently and every firm needs a support of established supply chain to streamline the activities to reduce cost and time thereby increasing productivity and profitability. Now a day most of the firms are depending on the innovative ways of handling inventory such as Just-in-time where the firm orders and stores only the volume of the inventory is that is required for the upcoming demand cycle means only the quantity which is required and only when it is needed is ordered. Supply chain manages the movement of materials or products by forming a chain involving supplier, wholesaler, distributor, retailer and finally the end customer. As inventory management is a subset of supply chain, efficient management of inventory reduces the time taken for movement of materials throughout the supply chain. Small firms may not have effective budget allocation plans and operational activities of these firms depends on the management of inventory. Firms that are dependent on the traditional ways are marked as outdated and stay behind the competitors in the industry.

Competition in the industry is intense and small firms can only reduce their cost of operations in inventory management and efficient management of inventory in the firms helps them to sustain the competitive prices offered by the competitors and large firms. Adopting innovative technologies in management of inventory not only reduces time but also eliminates dead stock which occupies storage space and incurs cost to procure them. Through this we can observe that the lead time is reduced drastically and firms are able to meet the demands of the end customers on time. Firms are even adopting digital environment such as websites and mobile applications and these methods require efficient ways to handle the movement of products simultaneously handling traditional methods. Ability of the firms to deliver the products in right condition and in right time not only gains positive feedback but also increases value to the firm. Timely delivery helps the firm to gain customer loyalty and their willingness to repurchase the products offered by the firm. Repurchases reduces the requirement level of costs for marketing and these funds can be used by the firms to provide value added services

Flexible inventory management system is crucial for the small firms to meet the rapid changing and uncertain demands of the consumers. Fluctuations according to the seasons and market requirements are to be studied carefully to grab the opportunities which markets create in the uncertain scenarios. Real time efficiency can only be achieved by integrating the rapid changes occurring in the inventory requirements to the supply chains supporting the firms. Inventory activities such as purchasing, storing and usage of raw materials is the major cost deciding factor for the firms which are into manufacturing. Efficient handling of these activities reduces the waste and storage space required by the firm. The primary aim of inventory management is to make sure that the firm has sufficient stock to meet the demand even in uncertain scenarios

Inadequate maintenance of inventory not only results in loss of sale but also leads to creation of dead stock for the products which require continuous improvements and modifications. This deadstock consumes space and incurs cost for their purchase and can be avoided only when we stay updated with the rapidly changing demand patterns and manage the inventory efficiently as they are a part of current assets to the firm. Efficient management of these current assets improves financial health and provides ability to sustain the competition in the industry.

II. REVIEW OF LITERATURE

N. Rajeev, (2008), "Inventory management in small and medium enterprises", Management Research News, Vol. 31 Issue pp. 659 – 669. Inventory management helps the firms to minimize cost of operations and also provides the opportunity to handle and meet the uncertain demands in the markets. Firms gain competitive advantage by handling inventory efficiently to reduce the cost of operations to provide value added services to their customers. Inventory management is further segregated into three categories such as inventory record keeping using automation and computerization to reduce errors and smoothen the process, inventory decision making which describes the quantity to be stored and price level the materials to be purchased and material requirement planning involves procurement of exact materials at the required time and in required quantity by the firm. Efficient handling of inventory is necessary to overcome fluctuations such as inflations and labor costs so that the final price of the product may not get impacted. Sufficient information must be obtained from the customers to understand their changing requirements. This paper focuses on study of implementation of inventory management principles in the small and medium enterprises in Bangalore to understand the link between physical stock movements and accounting systems among 40 firms. The information is gathered using questionnaire and correlation analysis is done to analyses the association between physical stock and accounting systems and results showed that the firms lack qualified staff and integrated approach to create a link between physical stock and accounting systems in firms.

Harish Patil and Rajiv Divekar (2014) - Procedia Economics and Finance 11 (2014) 561–571. Inventory management not only provides the competitive advantages like reduced cost and reduction in storage space requirements but also brought the challenges which firms must understand and take necessary actions to convert them into opportunities. Demand fluctuations is the most common challenge any firm can face as most of the products face seasonal demands such as stationary supplies have more demand during June and July, products related to entertainment has more demand during weekends and holidays and shopping products has more demand during festive seasons. Firms must analyze the demands that are changing according to the market requirements and modify their inventory management patterns according to these changing demands. The second major challenge is stock outs means the firm is not able to estimate the exact demand and lost the chance to make revenue and also lost the opportunity to add the customer to its basket and indirectly supported their competitors to take this advantage of this situation. Being organized and staying updated with the demand requirements helps the firms to add value to their firms.

This study is undertaken to understand the ways firms handle the demand fluctuations and how they mitigate to enhance the customer satisfaction levels. Data for this study is gathered from 200 respondents and also from company executives using questionnaire to gauge the customer satisfaction levels related to delivery of the products. Regression analysis is performed on this data and results showed that being organized and staying updated with the demand requirements of the customers helped the firms to increase customer satisfaction.

Vipul Chalotra (2013) "Inventory management and small firm's growth: An analytical study in supply chain", Vision 17(3) 213 – 222, MDI Sage Publications 2013. Firms started depending on innovative technologies such as just in time and lean production to enhance their distribution systems. Studies found that reduction in lot sizes reduced the impact of constraints created in the supply chain system. Controlling inventory in the need of hour helps the organizations to grab the competitive advantage and also decides the success factor for the organization. Effective inventory management requires involvement of middlemen known as intermediaries to create a chain called as supply chain which manages the flow of information and products through the producer and the end customer. Success of these supply chain depends on factors such as flexibility and trusting relations with suppliers

This paper focuses on understanding the factors which helps the organizations to reduce their cost of operations and increase competitive ability. Data is gathered from different levels of organizations using questionnaire and also through some journals. Data gathered is analyzed using regression and ANOVA to understand the relation between efficiency, service optimization, stability, cost reduction and competitive ability. Results showed that inventory management is a vital tool in improving productivity, inventory turns and also for positioning of products to increase economy and efficiency in the small manufacturing units

III. STATEMENT OF THE PROBLEM

Inventory management plays a crucial role in deciding the budget allocations for any organizations and these organizations need support of sufficient supply chain systems to handle their inventory efficiently. Small firms always face challenges handling inventory as they are in evolving stage and need an effective inventory management system for their growth. This research will examine the impact of inventory management on the growth of small firms with respect to supply chains across Hyderabad

Objectives

To assess the influence customer satisfaction in terms of inventory management on the growth of small firms
To determine the factors that influence growth with respect to inventory management in firms in the area of Hyderabad
To understand the relationship between customer satisfaction in terms of inventory management and growth in small firms

Scope of the Study

Scope of this research study is to highlight the study on small firms that helps to determine the impact of inventory management on their growth in Hyderabad city.

Hypothesis

H01: Effective inventory management do not foster growth in small scale firms H11: Effective inventory management foster growth in small scale firms
H02: There exists no relation between customer satisfaction in terms of inventory management and small firms' growth
H12: There exists relation between customer satisfaction in terms of inventory management and small firms' growth

IV. RESEARCH METHODOLOGY METHOD OF DATA COLLECTION

Type of Research: Exploratory and Descriptive Research

Primary Data: A structured questionnaire will be used to collect feedback from respondents. In this study primary data is going to be collect from Hyderabad with the help of the questionnaire

Secondary Data: Secondary data will be collected from the company website, product catalogue, business journals and research reports

Sample Size – 100
Convenient sampling will be used as the sampling tool for the collection of primary data

DATA ANALYSIS TOOLS

One-way ANOVA, Regression and Correlation

Limitations of the Study

The Sample size of the study is limited to 30 firms and around 100 manager respondents and is based on convenience sampling. Responses for this study is limited to the area of Hyderabad.

V. DATA ANALYSIS

Table 1: Gender Respondents

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Male	74	74.0	74.0	74.0
	Female	26	26.0	26.0	26.00
	Total	100	100.0	100.0	100.00

From the above table we can say that 74% of the respondents are Male and 26% of the respondents are Female

Table 2: Age of the Respondents

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	21 - 30	44	44.0	44.0	44.0
	31 - 40	43	43.0	43.0	87.0
	41 - 50	8	8.0	8.0	95.0
	Above 50	5	5.0	5.0	100.0
	Total	100	100.0	100.0	

From the above table we can say that 44% of the respondents belong to the age group 21 – 30. 43% of the respondents belong to the age group 31 – 40. 8% of the respondents belong to the age group 41 – 50 and 5% of the respondents are aged above 50

Table 3: Relation of the Respondents to the Firm

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Owner	46	46.0	46.0	46.0
	Employee	36	36.0	36.0	82.0
	Distributor	11	11.0	11.0	93.0
	Supplier	7	7.0	7.0	100.0
	Total	100	100.0	100.0	

Table 4: Relation to this Firm in terms of Establishment

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Sole Proprietorship	40	40.0	40.0	40.0
	Partnership	17	17.0	17.0	57.0

	Franchisee	3	3.0	3.0	60.0
	Other	40	40.0	40.0	100.0
	Total	100	100.0	100.0	

From the above table we can say that 40% of the respondents are proprietors, 17% of the respondents are partners, 3% of the respondents are franchisee and 40% of the respondents belong to other category in terms of establishment of the firm

Table 5: Investment of this Firm

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Less than 5 Lakhs	50	50.0	50.0	50.0
	6 - 10 Lakhs	25	25.0	25.0	75.0
	11 - 15 Lakhs	7	7.0	7.0	82.0
	16 - 20 Lakhs	4	4.0	4.0	86.0
	More than 20 Lakhs	14	14.0	14.0	100.0
	Total	100	100.0	100.0	

From the above table we can say that 50% of the respondents invested less than 5 lakhs in the firm, 25% of the respondents invested 6 – 10 lakhs in the firm, 7% of the respondents invested 11 – 15 lakhs, 4% of the respondents invested 16 – 20 lakhs and 14% of the respondents invested more than 20 lakhs in the firm.

Table 6: With how many Suppliers you have made Agreements

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Single Supplier	14	14.0	14.0	14.0
	Two Suppliers	28	28.0	28.0	42.0
	More than Two Suppliers	41	41.0	41.0	83.0
	In House Supplier	17	17.0	17.0	100.0
	Total	100	100.0	100.0	

From the above table we can say that 14% of the respondents has single supplier, 28% of the respondents has two suppliers, 41% of the respondents has more than two suppliers and 17% of the respondents has in house supplier.

Table 7: Ability to clear off their shelves

		Frequency	**Percent**	**Valid Percent**	**Cumulative Percent**
Valid	Every time	26	26.0	26.0	26.0
	Most of the times	45	45.0	45.0	71.0
	Sometimes	26	26.0	26.0	97.0
	Rarely	3	3.0	3.0	100.0
	Total	100	100.0	100.0	

From the above table we can say that 26% of the respondents were able to clear off their shelves every time, 45% of the respondents were able to clear off their shelves most of the times, 26% of the respondents were able to clear off their shelves sometimes and 3% of the respondents rarely cleared their shelves.

Table 8: Respondent's Interaction with Customers

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Phone Calls	28	28.0	28.0	28.0
	Emails	12	12.0	12.0	40.0
	Direct Contact	54	54.0	54.0	94.0
	Feedback Forms	5	5.0	5.0	99.0
	Other	1	1.0	1.0	100.0
	Total	100	100.0	100.0	

From the above table we can say that 28% of the respondents responded to the customers through phone calls, 12% of the respondents responded to the customers through mails, 54% of the respondents responded to the customers through direct contact, 5% of the respondents responded to the customers through feedback forms and 1% of the respondents responded to the customers using other ways of communication.

Table 9: Correlation between Customer Satisfaction & Growth of Small Firms

CS	Pearson Correlation	1	.874
	Sig. (2-tailed)		.000
	N	100	100
GS	Pearson Correlation	.874	1
	Sig. (2-tailed)	.000	
	N	100	100

From the above table we can say that Customer Satisfaction and Growth of small firms are positively related and the relation is very strong (0.874)

Table 10: Correlation between Inventory Management & Growth of Small Firms

		GS	IM
GS	Pearson Correlation	1	.888
	Sig. (2-tailed)		.000
	N	100	100
IM	Pearson Correlation	.888	1
	Sig. (2-tailed)	.000	
	N	100	100

From the above table we can say that Inventory management and Growth of small firms are positively related and the relation is very strong (0.888).

Table 11: Customer Satisfaction & Growth of Small Firms

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	60.346	1	60.346	315.520	.000
	Residual	18.743	98	.191		
	Total	79.090	99			

From the above table we can describe that the significant level is 0.000 which is less than 0.005 and hence the alternate hypothesis is accepted.

Table 12: Coefficients

Model		Unstandardized Coefficients		Standardized Coefficients	T	Sig.	Collinearity Statistics	
		B	Std. Error	Beta			Tolerance	VIF
1	(Constant)	1.199	.166		7.202	.000		
	CS	.710	.040	.874	17.763	.000	1.000	1.000

Growth of small firms = C + Beta (Customer Satisfaction) Growth = 1.199 + 0.710 (Customer Satisfaction)

Table 13: Model Summary – Customer Satisfaction predicts Growth of Small firms

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics				
					R Square Change	F Change	df1	df2	Sig. F Change
1	.874	.763	.761	.43733	.763	315.520	1	98	.000

Customer Satisfaction predicts Growth of Small firms by 76.3%

Table 14: Inventory Management & Growth of Small Firms

Model		Sum of Squares	Df	Mean Square	F	Sig.
1	Regression	62.366	1	62.366	365.473	.000

	Residual	16.723	98	.171		
	Total	79.090	99			

From the above table we can describe that the significance value is 0.002 which is less than 0.005 and hence the alternate hypothesis is accepted.

Table 15: Inventory Management & Growth of Small Firms

Model		Unstandardized Coefficients B	Unstandardized Coefficients Std. Error	Standardized Coefficients Beta	T	Sig.	Collinearity Statistics Tolerance	Collinearity Statistics VIF
1	(Constant)	.327	.199		1.641	.104		
	IM	.909	.048	.888	19.117	.000	1.000	1.000

From the above table we can describe that the significance value is 0.002 which is less than 0.005 and hence the alternate hypothesis is accepted.

Table 16: Inventory Management & Growth of Small Firms

Model		Unstandardized Coefficients B	Unstandardized Coefficients Std. Error	Standardized Coefficients Beta	T	Sig.	Collinearity Statistics Tolerance	Collinearity Statistics VIF
1	(Constant)	.327	.199		1.641	.104		
	IM	.909	.048	.888	19.117	.000	1.000	1.000

Growth of Small firms = C + Beta (Inventory Management) Growth = 0.327 + 0.909 (Inventory Management)

Table 17: Inventory Management & Growth of Small Firms

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics: R Square Change	F Change	df1	df2	Sig. F Change
1	.888	.789	.786	.41309	.789	365.473	1	98	.000

Inventory Management predicts Growth of small firms by 78.9%

V1. FINDINGS

It is evident that customer satisfaction in regards of inventory management is a deciding factor for the growth of these small firms. Firms which invested and made effort to enhance their inventory were able to fulfill customer demands and requirements and hence witnessed growth in terms of revenue, sales and profitability thereby decreasing space required to store their inventory and also reduced cost on marketing, customer retention, space occupied by the dead stock in the inventory and loss of customers by these small firms in Hyderabad area

In this study we surveyed about hundred respondents and most of them depend on inventory to meet their targets and supply chains which inscribe efficient inventory management processes were able to reduce cost, time and wastage thereby enhancing productivity and profitability

Enhanced inventory management helped these firms to meet the demand fluctuations and also forecast near accurate customer requirements in the near future. Fulfilling customer's most satisfying factors such as on time delivery, convenience, availability of quantity needed and stability in prices increased post purchase satisfaction and influenced repurchase decisions. Utilization of advanced supply chains removed deadstock, enhanced storage space thereby reducing cost of operations and improved relationship with the customers of the firm

From the analysis done with these hundred responses we can understand that customer satisfaction and the growth of the small firms are positively correlated and the relation is very strong with a correlation value of 0.874 and customer satisfaction is able to influence the growth of these small firms by 76.3% which means customer satisfaction played a crucial role in their growth. Inventory management and the growth of the small firms are positively correlated and the relation is very strong with a correlation value of 0.888 and inventory management is able to influence the growth of the small firms by 78.9% in Hyderabad

VII. CONCLUSION

The study on Inventory management gave us confirming results that customer satisfaction is positive related to growth of the small firms and enhanced relationships with them to influence them in post purchase satisfaction and repurchase decisions. One of the basic requirement of businesses particularly which are into goods is managing inventory and this requirement gained exploding prominence to become the crucial deciding factor in reducing costs, fulfilling customer requirements, modifying business operations and even the capital allocations

This study also made it clear that the firms which managed inventory at an optimal level not only saved time and money but also saved space for the prioritized inventory to be given preference to meet the business operations without any obstacles. Inventory management allowed these firms to fulfill customers' fluctuating demands without losing them to competition. As the industry is witnessing rapid rise in number of small firms, inventory management became the major deciding factor in fixing the discounts offered by these firms

SUGGESTIONS

Prioritize and audit the inventory managed to enhance storage space Analyze supplier performance and maintain backup supplier Take the 80/20 rule seriously. As 80% of profits are made from 20% of the stock Invest in inventory management technology which integrates well to your requirements Prevent excess raw material and track real time inventory

- Implement ABC analysis of inventory management

Class	Inventory %	Consumption %
A	20	80
B	30	15
C	50	5

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