



## The Factors Influencing Effective Inventory Management: A Supply Chain Perspective

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### Abstract

Inventory management is an important part of supply chain management which is implement and control the flow of goods and services in both forward and reverse integration of supply chain information. The scope of inventory management concerns the fine lines between replenishment lead time, carrying costs of inventory, asset management, inventory forecasting, inventory valuation, inventory visibility, future inventory price forecasting, physical inventory, available physical space, quality management, replenishment, returns and defective goods, and demand forecasting. The data collected through questionnaire from manufacturing and service industries mainly food and textile industries. The analysis is done with the help of SPSS. The results showed that demand forecasting, lead replenishment, order fulfillment, production, customer satisfaction, transportation cost, inventory purchasing and inventory level are all equally effective for inventory management. All hypotheses are accepted in this research.

**Keywords:** Inventory Management, Demand Forecasting, Lead Replenishment, Customer Satisfaction, Transportation Cost, Inventory Purchasing and Level

### 1. Introduction

Inventory management is an important part of supply chain management which is implement and control the flow of goods and services in both forward and reverse integration of supply chain information (Awan, Sroufe & Shahbaz, 2021). Inventory management involve activities from point of origin to point of consumption to fulfill customer need (Coyle, 2003). So it is understood that what is inventory management and it have different stages to complete the cycle of inventory management as it will be discuss in literature review. In today's business environment, inventory management evolve from raw material to WIP inventory and then material management to Inventory management. Although inventory is managed in different organization by through different ERP system from which inventory is manage effectively. The modernized impact of inventory management is to mitigate cost risk and make service faster than before from more available inventory control solutions (Ghobakhlo & Fathi, 2019).

So if we talk about organization it has a broad perspective to define in network of organizations involve in upstream and downstream activities in which firm uses raw material to produce valuable product for their customer and provides the valuable service by through supply chain operations in respect of downstream wholesaler and retailer as they are also valuable to achieve target customer by through correct information for their planning and forecasting financials (Singh, 2017). In these activities customer is main contributor to provide information for better performance of an organization. In fact, many organizations control their inventory management operation from third parties as HAVI is a McDonald third party inventory operations controller as it is daily analyzed their inventory stock on the basis of demand forecasting (Dai, 2017). Similarly, Walmart's have different types of inventory and it operate their inventory management by through RFID technological use which determine inventory in shelf of their retail stores. But it need to be identify how bulk inventory is controllable by through different variable measurement analysis (Ali & Haseeb, 2019). So, it has been clear inventory management is a major part of supply management and whose totally focus on management of inventory from supplier to customer and vice versa.

### 2. Background of the Problem

From the previous studies it is identified that, most of the studies have been done on inventory management system control as how inventory manage effectively on integrated system i.e., centralized and decentralized systematic match. In one of the study focuses on the inventory ordering and demand forecasting, and analyzed it by through commonly used FIFO and LIFO methods. Others major studies derived the relationship between inventory management and customer satisfaction and full fill demand in market by through inventory management (Fleisch & Thiesse, 2007). In one study the researcher identified the industrial site inventory management decision and retailer side inventory management decision and sees what the difference in between them. But there is need to be focus on some of major point of views in inventory management as inventory level from industrial, distribution and retail point of view like one of the retailer problem is to identify sufficient product availability in their retail store if it is not happening it would assume as low quality retailer. For this reason, manufacturing firm focus on large inventory store for their retailer to meet desire level of service (Byrne, 2016).

In relation with above, the study of transportation cost is observed for inventory decision making and also identify relationship of inventory and location that is important aspect of inventory management (Sirisoponsilp, 1988). The main objective of the

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study is to point out inventory management impact on different inventory related variable which involves in both industrial and retailer site. Although studies have been done on major aspect of inventory management in downstream site that is retailer and wholesaler but it is need to be distinguish inventory management decision making while operating inventory from industrial site to distribution and retailer site. In which safeguarding of inventory is also important to discuss shortly in literature as it a part of inventory management decision making because basic inventory control techniques and concepts need to be explore as well (Gunasekaran, 2019).

### **2.1. Problem Statement**

Today's the main objective of inventory management in market is to maximize customer need because the most of the problem in the market is the demand of product which is classified as seasonal inventory. So inventory storage and maintain inventory level which cost of inventory high produce shortage of products in market and customer demand shift because of supply of product is short and reach to market delay. So it also involves both transportation cost and inventory holding cost which effect overall supply chain performance if inventory order not fulfill demand.

### **2.2. Research Questions**

RQ1- What are the most effective inventory management tools in the followings for stock in movement?

- Demand forecasting
- Lead time replenishment
- Order fulfillment
- Production and Procurement
- Customer satisfaction
- Transportation Cost
- Inventory Purchasing
- Inventory Level

RQ2- Is there any difference between inventory management of retailer, industry and distribution site?

### **2.3. Purpose of the Study**

The study purpose is to identifying magnificent tools of inventory management, that either tools of inventory management is really effective or not because previous studies uses different approaches of study to solve the inventory management by through mathematical proves. So this study will be conduct by through questionnaire tool and collect data of different assumptions. The wholesalers and retailers that are major actors involved in downstream distribution channels face a special challenge in keeping inventory at reasonable levels due to the difficulty of forecasting demand and expectations of customers about product availability (Eickker, 2018). The orientation of the supply chain strategy determines how retailers decide on the average rate of purchasing inventory, the amount of inventory purchased, as well as the quality and variety of products offered to customers (Chopra, 2016). The parallel phenomena required to study in Pakistani organization. Because the above studies perused in most of the developed countries and mostly studied on inventory management through industrial site and retailer site and identified their cost impacts. But there is a knowledge gap which is also need to be study for i.e., maintain inventory level from industrial site to distribution and control transportation cost by supplier relation and safeguard inventory from uncertainty. So in this study it will be examine that how inventory management most effectively manage by different inventory management tools in which stock level maintain on the basis of their holding/carrying cost.

### **2.4. Scope of the Study**

The scope of inventory management concerns the fine lines between replenishment lead time, carrying costs of inventory, asset management, inventory forecasting, inventory valuation, inventory visibility, future inventory price forecasting, physical inventory, available physical space, quality management, replenishment, returns and defective goods, and demand forecasting. Balancing these competing requirements leads to optimal inventory levels, which is an ongoing process as the business needs shift and respond to the wider environment (Singh, 2017). As previous conducted research mostly on the above mention variables, but this study focus on the most significant result in managing inventory from industrial site and retailer site in contribution with distribution site as well by help of different experience author already know about it. They have to manage their inventory as the stock will not be short in market when its demand is high and the product is in seasonal demand. Using the most significant past studies theories and implement in the context of Pakistan that how inventory is manage and what supply chain role is.

## **3. Literature Review**

Inventory management is the availability of material control from manufacturing to retailer, which involves different activities such as company make goods for which it requires raw material from supplier to start production besides it will have completed as finished good inventory (Eickker, 2018). So in this literature review we will analysis inventory management impact either for manufacturing or finish good. Basically inventory management is a process of different components and each component required to manage inventory cost. As industrial site inventory management has

holding/carrying cost while distribution and retailer site inventory management cost is different that is transportation cost and ordering cost (Gunasekaran, 2019). In this way inventory management required to manage inventory on the basis of stock space or physical storage as Inventory managers required to know about their stock space which is available for storage possibly do. They also keep in mind that inventory space is important on the basis of stock which is available as stored inventory is maintain and take decision of known fact about inventory storage cost and it is the responsibility of inventory manager to control it on timely basis. It is also important to decide inventory order which based on company allocated budget for cover up inventory level as stock is available on time at optimum cost (Goltsos et al., 2022). This help inventory manager to decide inventory cost allocation based on what inventory in stock position or in hand i.e., in/out condition or whether to order more or not and what we order for to cover up our financial budget at minimum cost and maximum profit. Once the stock (inventory) managers decided to manage their inventory space according to its required proper planning and controlling of available material which involves purchasing, internal operations and distribution to its service point at once. For this reason, inventory demand forecasting accurately done if their system is good enough (Levinson, 2005).

Our main focus in this literature review is to identify the process of inventory management from industrial site, distribution site and retailer site because it involves cost variations according to demand and forecasting. Because of company heavy investment on inventory it required an inventory turnover rate to generate revenue (Leong, 2012). McDonalds involves their inventory management by through their supplier which is HAVI. HAVI is a third party logistic company which handled McDonald's overall inventory operations as demand forecasting and procurement is on the basis their production plan so it helps to order minimum quantity to avoid waste and transportation cost burden (Dai, 2017). But there is not say that every company is to take their inventory operations to its third party logistic company. Third party is a good option to control inventory management but it is costly and our focus in this literature is to manage inventory effectively from industrial site to retailer site it also involves distribution process which is separately identified in different articles. Here is how we discuss inventory management components on the basis of their cost impact when inventory goes into cycle process. It is defining by inventory management operations in supply chain strategy which influence the overall competitive strategy (Ambe, 2012). It is also specifying the one goal and action which integrating suppliers, manufacturers, warehouses and retail stores. This is what supply chain guide the overall functions of inventory cycle process as what to purchase and produce in right quantities as stock is not in out of stock position and reach in market or customer at right time by through distributor which help to identify customer demand and where the demand is focus in the mean possible time. The implemented strategy helps to balancing the overall supply chain cost at every point of origin on the basis customer satisfaction and requirements (Qrunfleh & Tarafdar, 2013).

### **3.1. Demand Forecasting and Inventory Management**

Demand forecasting is important for today's competitive environment. The major objective of demand forecasting is to calculate accurate demand as it will be productive, distributed and fulfill customer order (Fatorachian & Kazemi, 2021). Demand is actually estimated from both customer and retailer as, demand management is important because it is an effort to focused customers for demand arises and manage them on the basis of their demand information which will be helpful in estimating operating decision (Coyle et al., 2003). So it derived, demand information is necessary when managing inventory. For inventory management, the demand is also differentiated as dependent and independent demand. A demand which is dependent and associated with final product like raw material, subassemblies etc. or call internal demand. Whereas independent demand is external market requirement as car required battery to run or start car. So there is battery is an external part of product required which is essential for independent product demand forecasting (Leong, 2012). The biggest task of inventory management is to maintain the inventory level from demand and source. Company wants to maintain its stock level on the basis of its demand and it will be enough to satisfy their customer need and their sales has no impact just because of the stock out situation. Company's not wants to make their inventory in overstock position because it has a carrying cost (Coyle et al., 2003). So it's also important for retailer to order their inventory according to demand and provide accurate information to their supplier because retailer is a part of downstream line of overall supply chain process as in above figure. Hence it is assuming that demand forecasting is associating with inventory management because each time demand need to be calculated on the basis of their cost the historical trend will help in forecasting demand.

### **3.2. Lead Time Replenishment and Inventory management**

By using RFID technology, it is automatically detected that how much inventory we need to process as manufacturer know about to produced units and distributor automatically know about how much units distributed by the use of both RFID and ERP system which initiate advance shipping notice (ASN) (Ali & Haseeb, 2019). As same for retail store RFID tells readers to place of items goods in the shelf. Basically the reorder point process is automatically order goods with telling the information manually, all the information is on LCD screen. This is actually implement in Walmart store now.

One of the retailer problems is to identify that if retailer used traditional inventory management, retailer is committed to purchase backorder inventory otherwise it will face a penalty cost from manufacturer which is unable to holds lots of inventory because of backorder from retailer on the basis of backup plan which is seasonal (Leong, 2012). In this scenario, inventory replenishment times is zero, which is realistic because company make product just to complete the backup order

from retailer which is agreeable to purchase it because it is a backup inventory plan other perspective to sale for. So in this time when inventory replenishment time is none consumer order for pre approached or pre order inventory will not be necessary to accept order from customer (Setiawan et al., 2021). In one of the study it found that, lead time replenishment decision can be take on the basis of Statistical Inventory Control (SIC) system which make better replenishment decisions at one stock point rather than one or more. In this system decision based on cost, forecasted stock required in stock point and lead time replenishment. So it will be difficult to know inventory in other stock point which is also necessary to fast inventory replenishment on time but it would not be happen due to integration need in stock point's information (Donselaar, 1996). This suggest that inventory management is also effected by lead time replenishment as discuss by through stock points.

### **3.3. Order Fulfillment and Inventory Management**

The first important thing in quantity order is, how much inventory is ordering? It dependent on inventory managers that how much inventory amount will be order as the required inventory will be replenish in stock and control its order fulfill (Eickker, 2018). In study of Simon (1952) define the pattern of inventory order quantities in gathering an information regarding available inventory, WIP inventory, demand fluctuation and lead time to order inventory. Although there is defining a lot size problem as if it orders in specific period, the inventory quantity is required in bulk amount because it meet customer demand in specific period. Therefore, if we order inventory in smaller lot sizes the carrying cost is low but it increase the ordering cost as opposite if we order in large lot size quantity order, the order cost is low but cost of inventory or carrying cost is high (Nieuwerth, 2016). From these scenarios we assume that order cost or inventory quantity is important for inventory management because order fulfillment with respect to demand is necessary.

### **3.4. Production & Procurement and Inventory Management**

As Leong (2012) defines model of economic manufacturing quantity (EMQ). Economic manufacturing quantity is essential in production process while partial delivery of material (Ali, 2015; Ali, 2018). From this model it is easily identify that which item are manufacture and consumed also. The model EMQ is suitable for gradually production while in EOQ we place an order at once. Keeping inventory in multiple locations within organization is best suitable for smooth production and help wholesaler and retailer to offer customer service for better public image when balance in sufficient amount of inventory level. As inventory level is maintaining the return on investment (ROI) is high (Agu, 2016; Roussel et al., 2021). Although in one of the study, the author's focus on machine productivity which is also very important for inventory in raw material or work in process inventory as if machine fail to operate any reason the production flow will not be stop and mitigate risk of idle time in productivity (Goplakrishnan & Skoogh, 2018; Sajid and Ali, 2018). In one of the study, the production is more focus with their procurement. In production raw material purchased according to production requirement and for it consignment is order for this particular production job which has an order cost. So it will be purchase at different prices and as early possible in large quantities and send immediately to production department on the basis of raw material need which is available from purchase. For this reason, the production cost and cost of purchase inventory make difference in accumulation of full inventory in store and inventory used in production department just because of saving of raw which is not fully utilized make it simply excess stock in storage (Emmanuel, 2015). From these above criteria's it found that inventory management has also an impact from production and procurement site. If production planning is not match forecasted demand it means, there is an excess inventory purchased and make their inventory as in stock out position.

### **3.5. Customer Satisfaction and Inventory Management**

Customer satisfaction is important because inventory management depend on customer satisfaction and it is not possible to measure because of it is a part of subjectivity. Here is "Satisfaction" means quality of product and services. In which business relationship, price and performance and customer expectations are involving in determining customer satisfaction (Eckert, 2007). Organizations are striving to continue their inventory management process by using modern techniques and refine inventory management technique to optimize in managing inventory more effectively. As a result, inventory cost maintains and stocks are completely utilized. Thus it maximizes customer service when delivery become timely and through fast service it will competitive and valuable for customer service (Eckert, 2007).

One of the evidence identified that customer satisfaction is depending on the company image from which it perceived quality of product and services. There is an approach which improve both customer satisfaction and products quality that is Total Quality Management (TQM). From this organization do business and improve its standards of productions to satisfy their customer by through quality (Arnold, 2008). Eckert (2007) proposed that customer satisfaction has a relationship with inventory management improvement. In their study, the questionnaire and surveys were conducted from different retailer and one distributor of grocery industry.

### **3.6. Transportation Cost and Inventory Management**

If we see the impact of transportation cost on inventory management, transportation cost is that on my own understanding that, goods deliver from one destination area to another. So in this we see the impact of inventory management as it holds cost until it not reaches to its final destination (Engbrethsen & Dauzère-Pérès, 2019). This will include time, market demand, distribution lead time and customer service. For this reason, one of the study defines how transportation cost assign when identifying mode of transportation "Manufacturers have long been aware that the choice of transportation type involves a

trade-off among speed, reliability and cost (Becerra, 2022). Shipment by the cheapest transport mode, such as ship or rail, will minimize transportation costs but result in relatively long transport times and relatively high uncertainties in the length of transit time. Hence inventories at the destination must be higher to guard against unexpected demand surges during the long and uncertain transit times” (Hernon, 2007).

In different phenomenon’s the concept will be clear in understanding the transportation cost and inventory management, so from the past year’s transportation renowned as the most important function of physical distribution centers (Kmiecik, 2022). The choice of transportation for single market could be analysis on the basis of cost model because it involves both inventory cost and transportation cost when shipper identify different for transportation. Reynolds and Buffa (1977) established a model which include different variable of transportation. They realized that in identifying inventory management strategy which is associated with transportation cost but they fail to determine the suitable inventory management strategy. And the result it leads to be related with other determinant i.e., quantity purchase and mode of transportation decision (Engebretsen & Dauzère-Pérès, 2019).

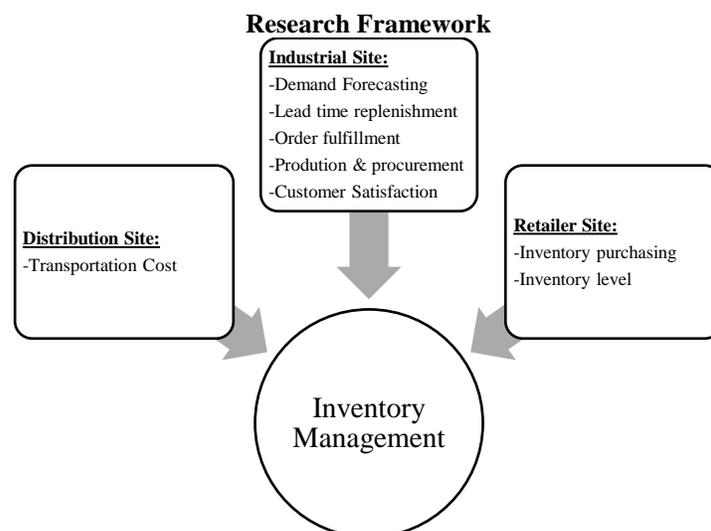
**3.7. Inventory Purchasing and Inventory Management**

On the basis of supply chain strategy, retailer is difficult to decide how much inventory will purchase on average rate because retailer focus on inventory purchasing, quality and variety which offer to their customer (Eickker, 2018). The purchase of an inventory has different aspect in industry and retailer site. As industry has well established process to purchase their inventory in most advanced state in the evolutionary improvement of procurement, purchasing and other supply chain actions which is integrated as one centralized ERP system (Singh, 2017). The difference in handling inventory is to serve one purpose as both industry and retailer are not want to stock out position because they both suffer customer.

In one of the phenomenon is define retailer inventory management; fast fashionable goods the supply chain strategy defines when product line is similar creating long term opportunities as most of the goods involve each other and producing it for long term agreement by wholesaler retailer purchasing (Harrington & Smith, 2013). For example, purchasing a high amount of material and make design for it and then manufacturing according to fashion trend in market. This assumes that inventory management is related purchasing on the basis of market trend which is constantly change. Author define it will help to optimize fast moving consumer market which is up to date customer in fashion trend (Sabet, 2017). So in this way inventory in stock is value able on the basis of demand production.

**3.8. Inventory Level and Inventory Management**

As inventory level is determining in one of the inventory management theory which is define that inventory level is also effected by some exogenous variables, it is concerned with significant minimal inventory levels some exogenous variables such as lead-times distribution, supply and demand risk, lot sizes and product variety (Rumyantsev, 2007). The researcher identifies inventory level impact in inventory management by different perspective in most of the research studies on inventory management remains focused on specific often theoretical situations. So there is less empirical evidence for the significant relationship between inventory level and factors affecting on it. But for this point of view inventory level is important in inventory management because without inventory level control inventory level will not be optimize and it is also associated with cost of operations (Williams, 2011).



**Figure 01: Research Framework**  
Source: Coyle et al., (2003) and Eickker (2018)

### 3.9. Hypothesis

- H1: Demand Forecasting has a positive and significant impact on Effective Inventory Management  
 H2: Lead Time Replenishment has a positive and significant impact on Effective Inventory Management  
 H3: Order fulfillment has a positive and significant impact on Effective Inventory Management  
 H4: Production has a positive and significant impact on Effective Inventory Management  
 H5: Customer Satisfaction has a positive and significant impact on Effective Inventory Management  
 H6: Transportation cost has a positive and significant impact on Effective Inventory Management  
 H7: Inventory Purchasing has a positive and significant impact on Effective Inventory Management  
 H8: Inventory level has a positive and significant impact on Effective Inventory Management

## 4. Methodology

### 4.1. Research Design

Our research design is descriptive, because our study need to explore inventory management field in the practice of different organizations and small business functions. Inventory management study is involving in all lines of business functions means manufacturer, supplier, distributor and retailer/wholesaler that our study's focus.

### 4.2. Research Approach

We used deductive approach which includes theoretical evidence from the literature review which is based on the grounded theories. In Pakistan, this study is very necessary for future aspect of businesses and helpful in the literature available in the sense of their operation management. Therefore, this study is not focus on higher technological aspect of inventory management it focuses on its qualitative study which include culture of the organization and the culture of the business communities that are different in each other but we choose both for the study because the analysis impact on inventory management which help to identify what is the cause behind in managing inventory of both perspectives.

### 4.3. Data Collection

From questionnaire, we will collect in qualitative scaling/rating of the questionnaire statements that will be analyze on the basis of dependent and independent variables. The data will be collected from manufacturing industries of Pakistan which deals in broad way to implement inventory management practice, but our focus is food industry, textile and service industry. Because, service industry has also focus on inventory management like logistics companies in Pakistan i.e., TCS, Leopard, Trax etc. Random convenience sampling technique is used to determine sample because population is largely distributed and data need to be collection within possible time period.

## 5. Data Analysis

### 5.1. Descriptive Statistics

**Table 1: Descriptive Statistics**

	N	Minimum	Maximum	Sum	Mean	Std. Deviation	Variance	Skewness		Kurtosis	
	Statistic	Statistic	Statistic	Statistic	Statistic	Statistic	Statistic	Statistic	Std. Error	Statistic	Std. Error
Inventory Management	377	2	5	3589	4.49	0.517	0.238	-0.244	0.086	-0.7	0.173
Demand Forecasting	377	3	5	3993	4.99	0.106	0.011	-13.54	0.086	204.02	0.173
Lead Replenishment	377	2	5	3692	4.62	0.495	0.245	-0.629	0.086	-0.877	0.173
Order Fulfillment	377	3	5	3988	4.99	0.132	0.017	-9.584	0.086	102.1	0.173
Production	377	4	5	3597	4.5	0.5	0.25	0.015	0.086	-2.005	0.173
Customer Satisfaction	377	2	5	3988	4.99	0.149	0.022	-13.26	0.086	219.73	0.173
Transportation Cost	377	4	5	3599	4.5	0.5	0.25	0.005	0.086	-2.005	0.173
Inventory Purchasing	377	2	5	3957	4.95	0.322	0.103	-6.766	0.086	48.906	0.173
Inventory Level	377	4	5	3917	4.89	0.31	0.098	-2.539	0.086	4.458	0.173

**Case Processing Summary**

		Cases					
		Valid		Missing		Total	
		N	Percent	N	Percent	N	Percent
Inventory Management DV	Demand Forecasting IV 3	1	100.0%	0	0.0%	1	100.0%
	4	5	100.0%	0	0.0%	5	100.0%
	5	794	100.0%	0	0.0%	794	100.0%

**Descriptives<sup>a,b</sup>**

Demand Forecasting IV			Statistic	Std. Error
Inventory Management DV 5	Mean		4.48	.018
	95% Confidence Interval for Mean	Lower Bound	4.45	
		Upper Bound	4.52	
	5% Trimmed Mean		4.49	
	Median		4.00	
	Variance		.268	
	Std. Deviation		.517	
	Minimum		2	
	Maximum		5	
	Range		3	
	Interquartile Range		1	
	Skewness		-.231	.087
	Kurtosis		-.698	.173

a. Inventory Management DV is constant when Demand Forecasting IV = 3. It has been omitted.

b. Inventory Management DV is constant when Demand Forecasting IV = 4. It has been omitted.

From descriptive statistics it has been observed values at confidence level of 95%, therefore mean, maximum and minimum values are common on the basis of qualitative data it is nearly on 4.95. Descriptive analysis if we see from the above explore table it will very lengthy analysis therefore we choose common perspective of inventory management analysis as it includes all factors of association that is demand forecasting. It is the economically identical variable and it shows overall perspective of inventory management.

**5.2. Validation of Model**

**Table 2: Reliability Statistics**

**Reliability Statistics**

Cronbach's Alpha	Cronbach's Alpha Based on Standardized Items	N of Items
.865	.893	21

It assumes that our items test is highly consistent with each other and it is above from the case of 0.70 Cronbach's Alpha consistency therefore we continue to our data collection as much as possible. Here we note that the continuous participation in data collection will lead to a sustainable and reliable result in our study.

**5.3. Hypotheses Testing**

Before analyzing data, we need to establish concept that all variables that we will be testing is not necessarily show the cause effect relationship between inventory management and other variables. However, we found in most of the studies that inventory management is independent from other variations but we do not know about these variations. Therefore, we found most of the variables which is associated with inventory management in both functions of the businesses we are here to perform it one by one as per our hypothesis.

Let assume,

Y = (Inventory Management)

H1: Demand Forecasting has a positive and significant impact on Effective Inventory Management

Y = Constant + Demand Forecasting

## Correlations

		Inventory Management DV	Demand Forecasting IV
Inventory Management DV	Pearson Correlation	1	-.082*
	Sig. (2-tailed)		.020
	N	800	800
Demand Forecasting IV	Pearson Correlation	-.082*	1
	Sig. (2-tailed)	.020	
	N	800	800

\*. Correlation is significant at the 0.05 level (2-tailed).

Hypothesis (H1) accepted at 0.05 significant level

H2: Lead Time Replenishment has a positive and significant impact on Effective Inventory Management

$Y = \text{Constant} + \text{Lead time replenishment}$

## Correlations

		Inventory Management DV	Lead Time replenishment IV
Inventory Management DV	Pearson Correlation	1	-.774**
	Sig. (2-tailed)		.000
	N	800	800
Lead Time replenishment IV	Pearson Correlation	-.774**	1
	Sig. (2-tailed)	.000	
	N	800	800

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

Hypothesis (H2) accepted at significant level of 0.05 level

H3: Order fulfillment has a positive and significant impact on Effective Inventory Management

$Y = \text{Constant} + \text{Order fulfillment}$

## Correlations

		Inventory Management DV	Order fulfillment IV
Inventory Management DV	Pearson Correlation	1	-.040
	Sig. (2-tailed)		.261
	N	800	800
Order fulfillment IV	Pearson Correlation	-.040	1
	Sig. (2-tailed)	.261	
	N	800	800

Hypothesis (H3) neither rejected nor accepted because it is insignificant at 0.05 level in this assumption but, here we test differently or in broad we found significant correlation with inventory management.

**Correlations**

		Inventory Management DV	Inventory Management DV2	Order fulfillment IV	Order fulfillment IV2
Inventory Management DV	Pearson Correlation	1	-.471*	.694**	-.037
	Sig. (2-tailed)		.011	.000	.852
	N	28	28	28	28
Inventory Management DV2	Pearson Correlation	-.471*	1	-.679**	-.471*
	Sig. (2-tailed)	.011		.000	.011
	N	28	28	28	28
Order fulfillment IV	Pearson Correlation	.694**	-.679**	1	.694**
	Sig. (2-tailed)	.000	.000		.000
	N	28	28	28	28
Order fulfillment IV2	Pearson Correlation	-.037	-.471*	.694**	1
	Sig. (2-tailed)	.852	.011	.000	
	N	28	28	28	28

\*. Correlation is significant at the 0.05 level (2-tailed).

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

H4: Production has a positive and significant impact on Effective Inventory Management  
 Y = Constant + Production & Procurement

**Correlations**

		Inventory Management DV	Production and Procurement IV
Inventory Management DV	Pearson Correlation	1	.919**
	Sig. (2-tailed)		.000
	N	800	800
Production and Procurement IV	Pearson Correlation	.919**	1
	Sig. (2-tailed)	.000	
	N	800	800

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

Hypothesis (H4) accepted at significant level of 0.05 level

H5: Customer Satisfaction has a positive and significant impact on Effective Inventory Management  
 Y = Constant + Customer Satisfaction

**Correlations**

		Inventory Management DV	Customer Satisfaction IV
Inventory Management DV	Pearson Correlation	1	-.051
	Sig. (2-tailed)		.147
	N	800	800
Customer Satisfaction IV	Pearson Correlation	-.051	1
	Sig. (2-tailed)	.147	
	N	800	800

Hypothesis (H5) is accepted because it is significant at 0.05 level in this assumption as we test differently or in broad perspective we found significant correlation of customer satisfaction with inventory management.

**Correlations**

		Inventory Management DV	Inventory Management DV2	Customer Satisfaction IV	Customer Satisfaction IV2
Inventory Management DV	Pearson Correlation	1	-.471*	. <sup>b</sup>	.694**
	Sig. (2-tailed)		.011	.	.000
	N	28	28	28	28
Inventory Management DV2	Pearson Correlation	-.471*	1	. <sup>b</sup>	-.679**
	Sig. (2-tailed)	.011		.	.000
	N	28	28	28	28
Customer Satisfaction IV	Pearson Correlation	. <sup>b</sup>	. <sup>b</sup>	. <sup>b</sup>	. <sup>b</sup>
	Sig. (2-tailed)	.	.	.	.
	N	28	28	28	28
Customer Satisfaction IV2	Pearson Correlation	.694**	-.679**	. <sup>b</sup>	1
	Sig. (2-tailed)	.000	.000	.	
	N	28	28	28	28

\*. Correlation is significant at the 0.05 level (2-tailed).

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

b. Cannot be computed because at least one of the variables is constant.

H6: Transportation cost has a positive and significant impact on Effective Inventory Management

Y = Constant + Transportation Cost

**Correlations**

		Inventory Management DV	Transportation Cost IV
Inventory Management DV	Pearson Correlation	1	.919**
	Sig. (2-tailed)		.000
	N	800	800
Transportation Cost IV	Pearson Correlation	.919**	1
	Sig. (2-tailed)	.000	
	N	800	800

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

Hypothesis (H6) accepted at significant level of 0.05 level

H7: Inventory Purchasing has a positive and significant impact on Effective Inventory Management

Y = Constant + Inventory Purchasing

**Correlations**

		Inventory Management DV	Purchase stock IV
Inventory Management DV	Pearson Correlation	1	-.144**
	Sig. (2-tailed)		.000
	N	800	800
Purchase stock IV	Pearson Correlation	-.144**	1
	Sig. (2-tailed)	.000	
	N	800	800

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

Hypothesis (H7) accepted at significant level of 0.05 level

H8: Inventory level has a positive and significant impact on Effective Inventory Management

Y = Constant + Inventory Level

**Correlations**

		Inventory Management DV	Stock Level IV
Inventory Management DV	Pearson Correlation	1	-.282**
	Sig. (2-tailed)		.000
	N	800	800
Stock Level IV	Pearson Correlation	-.282**	1
	Sig. (2-tailed)	.000	
	N	800	800

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

Hypothesis (H8) accepted at significant level of 0.05 level

**5.4. Hypotheses Assessment Summary**

**Table 4: Hypotheses Assessment Summary**

Hypothesis	Decision on the basis of accepted hypothesis
H1: Demand forecasting	Accept
H2: Lead time replenishment	Accept
H3: Order fulfillment	Accept
H4: Production & Procurement	Accept
H5: Customer Satisfaction	Accept
H6: Transportation Cost	Accept
H7: Inventory purchasing	Accept
H8: Inventory level	Accept

From the above table it will be easy to distinguish our hypothesis that we have tested. This deep analysis lead to us that all hypotheses are accepted which means that all variables are correlated to our dependent variable that is inventory management. Further discussion will be done, which is recommendation and conclusion.

**6. Discussion, Conclusion and Recommendations:**

**6.1. Discussion**

In continuation of chapter # 04, our data that we have collected from most of the food beverages and textile industry but there is participant from other industries as well. However, data collection is not easily achieved. In most of the studies the inventory management functions based on computerized advance functions like barcodes use, system applications modules to record inventory management information. Control over inventory is physical vs. advance technology is change the perspective to done things manually. However, our study is also focus on technology but we did not comprehensively discuss in literature review and we also did not find out any variable which is related to technology is not clearly identified. But here we make connection that how our hypothesis result achieved and what its advance technological benefits in terms of saving cost is discuss in this chapter.

Variables	Justification from previous studies	References
DEMAND FORECASTING	Retailer after implemented inventory management system for 6 month periods they easily recognized the demand of products and differentiate items also. This will help both retailers & firm to identify market demand.	Scott Grant Eckert, "Inventory Management and Its Effects on Customer Satisfaction", Journal of Business and Public Policy (ISSN: 1936-9794) Volume 1, Number 3 (2007)
LEAD TIME REPLENISHMENT	As in the case of cycle inventory, the ability to calculate the reorder point would allow owners or	References,

	managers to determine the demand during lead time and the safety inventory needed during stock-outs or before replenishment takes place (Badenhorst-Weiss, Van Biljon & Ambe 2017:141).	Inventory Management Practices and Business Performance for Small-Scale Enterprises in Kenya Nyabwanga, Robert Nyamao
ORDER FULFILLMENT	It is similar with order quantity, but order quantity is not having core-relationship with inventory management but order fulfillment is different as it overcome the load of backorders or reorders and gain profit on the basis necessary inventory. This help company to not oversize in their stock.	Fisher, Rajaram, and Raman Optimizing Inventory Replenishment of Retail Fashion Products, MANUFACTURING & SERVICE OPERATIONS MANAGEMENT, 2001 INFORMS Vol. 3, No. 3, Summer 2001, pp. 230–241
PRODUCTION & PROCUREMENT	More product variety requires more production switching, hence longer times between production of a given product resulting in the need for higher inventory (Cachon and Olivares, 2010).	Sander de Leeuw Matthias Holweg Geoff Williams, (2011), "The impact of decentralised control on firm-level inventory", International Journal of Physical Distribution & Logistics Management, Vol. 41 Iss 5 pp. 435-456
CUSTOMER SATISFACTION	Due to customer satisfaction inventory management is significant relationship show in one of the study as 70% of the customers are not willing to wait for their product. Therefore, maintaining inventory according to it and fulfill order on time is part of inventory management.	Sander de Leeuw Matthias Holweg Geoff Williams, (2011), "The impact of decentralised control on firm-level inventory", International Journal of Physical Distribution & Logistics Management, Vol. 41 Iss 5 pp. 435-456
TRANSPORTATION COST	Delivery of inventory: • Order large quantities of inventory to qualify for free delivery from suppliers. Larger retailers may have inventory delivered to an intermediate site to lower inbound transportation costs.	Eicker, T. & Cilliers, J.O., 2017, 'Equipping small business retailers to manage logistical supply chain drivers: A theoretical guideline', Journal of Transport and Supply Chain Management 11(0), a332. <a href="https://doi.org/10.4102/jtscm.v11i0.332">https://doi.org/10.4102/jtscm.v11i0.332</a>
PURCHASE INVENTORY	Support this hypothesis in terms of qualitative result as management take decision to purchase right amount inventory for their day to day business activities. This shows that purchase of inventory have significant impact on inventory management as management take decision to overcome their resource waste. (Wisner et al. 2016:209).	Eicker, T. & Cilliers, J.O., 2017, 'Equipping small business retailers to manage logistical supply chain drivers: A theoretical guideline', Journal of Transport and Supply Chain Management 11(0), a332. <a href="https://doi.org/10.4102/jtscm.v11i0.332">https://doi.org/10.4102/jtscm.v11i0.332</a>
INVENTORY LEVEL	We build on the studies by Cachon and Olivares (2010), Rummyantsev and Netessine (2007), Hendricks and Singhal (2008), and Rajagopalan and Malhotra (2001), who all identified different factors that determine the finished goods	Sander de Leeuw Matthias Holweg Geoff Williams, (2011), "The impact of decentralised control on firm-level

inventory levels in the supply chains they studied. Common to these studies are the assumptions that distribution outlets or dealers are homogenous and that their behavior is uniform in response to central control (i.e. the manufacturer's strategy), which in turn allows for the inventory in the distribution system to be evaluated at firm level.

inventory", *International Journal of Physical Distribution & Logistics Management*, Vol. 41 Iss 5 pp. 435-456

## 7. Conclusion

We state the problem of researcher that multiple products study required and we select Food Beverages and Textile industries in which multiple products offered and inventory management is different with each other's but the functions of their supply chain is similar to each other.

As in our data collection we identified that most of the participants are from industry based but food franchises and small garments business participants are also part of data collection. It is very useful in future studies that, businesses which is associated with major firms or organizations involved in different inventory management system. However, small business also in inventory management as to manage in their stores whereas organizations involved in both to manage their stock stores and warehouses. Therefore, this study focus in supply chain perspective of inventory management rather than advance infrastructure development discussion.

In previous studies analysis inventory management is played an important role in an organization and also important to study in perspective of supply chain management. Without it supply chain major functions are not possible to implement.

Management decision is now focus on cost effective inventory management drivers which are simultaneously studied in our research. Hence we identified main reason is to focus in inventory management is customer satisfaction and inventory level monitoring, and this activity is on daily basis. However, inventory management is all effectively managed by small businesses retailers, distributors and mainly on industrial site but they all are required today need's that is more advance focus in their inventory management as warehouses required cost effective management as it nearer to its industrial site where their transportation cost are save.

Our main focus of this study is to find out all aspects of inventory management or inventory management key drivers and we found relationship in between them. It was difficult to identify these variables descriptively, but respondent contribution and limited time frame lead us that inventory management is a major function of supply chain and it will continue to study further. Further study means inventory management has daily change in terms of its improvement process by management decision. In illustrated respondent profiles will continuously update further until the target population will reflect further.

### 7.1. Recommendation

Our recommendation is based on our descriptive study. Throughout in our study we recognized that this study required a lot of time to study inventory management functions in an organizations and small business transaction which would yours be self-observations. Because in supply chain study there is lots of associated functions for inventory management, let suppose you will observe inventory management in an organization from its raw material or in-process inventory to warehouse's and distribution. And then distribution to small business retail store.

We focus in this study as most of the variables that is associated with inventory management and we mention our variables structure in chapter no. 2 literature review. So in, data analysis we find that most of the variable is excluded as model and excluded as in their correlation. Therefore, we recommend that further study will be valid if researcher allow to add more variables like bar-code effect on inventory management, applications association with inventory management (like software solutions ORACLE, SAP, Microsoft Dynamics) and others associated explore variables in an aspect of inventory management key drivers. This will be further implementation for this studies. Because it will be easy to find out that what will be the industry choose for researcher and this will be possible to study as cross sectional. Because of the limited study time and questionnaire focus we remain our study here further study will be possible.

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