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A Case Study on
Exploring the Effects of Sales and Distribution

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Abstract: **The phrase world has now become a global village is rightly indicating the fruitful effects and outcomes of High sales and Profitability While; examining this Independent study first I will discuss the Abbott overall performance in Pakistan. Abbott is a 2 Billion company it has 33 towns in all over Pakistan which are working according to their demands and full filling the company needs. When this dilemma crop up there are unusual reasons behind that's. Whenever we have discuss this issue everybody have different opinions and conflict of interest but the problem of declining sales in still lying in Karachi warehouse and need to be resolved with true sprit. The problem can be Inventory or bad supply chain, meager branding, offensive marketing or may be motivation level of the sales team was not admirable. There are many factors behind this, may be one can true or all can true. An in-depth analysis of this situation will give us the exact idea. However, we believe that pitiable supply chain and ineffective inventory management is the foremost motive or may be one of the very important rationales which play a significant role behind this Sales issue but before initiate exertion on it we have to find what other say about that and for that we reviewed some literature and results. Consequently, there is a mixed opinion of different authors that Inventory is highly dependent on sales while some say it has a slight impact on sales but when we apply some statistical tools that's are regression and co-relation we found that Inventory is highly dependent on Forecasted Sales and working Capital but it has a very slight impact on Sales. There are several other reasons of declining sales. While, Conducting a Regression and Co-relation analysis it is proved that working capital and Forecasted sales are highly reliant on Inventory level whereas, it has no significant impact on Sales. There are assorted reasons of moribund Sales.**

Keywords: *Sales, Distribution, Abbott, Working Capital, Inventory, stocks*

1. Study Background

With a history of over 100 years, they find out different medical ways to live people a healthier life. Today, 70,000 employees in more than 130 Countries around the world share their passion for Caring people through Science.

Abbott has sales, Manufacturing, Research and development, and distribution facilities around the world. In Pakistan Abbott Pharma have 33 Towns 12 million per network and a maximum of 45 days of inventory in their warehouses.

This problem was chosen to observe that, the Sales of Abbott is declining from past 6 months and the reason behind that they do not have enough inventories in the warehouses to provide an on-time supply of their products to distributors. Hence there are various other reasons of declining of sales but here with the help of Co-relation and Regression analysis we see that is Inventory is the main reason for declining the sales performance of Abbott. Abbott Sales report (2010)

Pharma Industry expends billions of dollars on R&D and Consumer Scientific Information. To asses new products and service meeting began to start 50 years age to promote the exchange of experiences among different members and groups developing new information service and provide a path for the information industry.

Inventory management is generally recognized to be of sufficient importance to warrant the appointment of a person to carry specific responsibility for it; possibly along with other areas of the distribution function. Preferably, inventory should be seen as one component of distribution, interacting as it does with all the elements contained therein. This monograph has not been written for the analyst but rather for the person responsible for taking inventory decisions. The aim is to present a general description of the main problem areas such as declining of Sales and revenue and to describe procedures by which the problems can be resolved. Given a broad appreciation a useful dialogue may then be set up with the analyst and more effective use made of the large quantity of data which is invariably available in the distribution field.

1.2 Statement of Problem

To analyze the future growth to Increase their Performance level of Abbott in Karachi, Following Problems will be focused while conducting the Study

1) To Find Out, Is there any significant growth and Improvement in the sales revenue of Abbott?
2) To find out, Is Shortage of Inventory in Karachi Warehouse is the only reason of declining Sales in Karachi?
3) To explore the effects of sales and distribution network on the basis of Sales Volume, Inventory level, Forecasted Sale and Working Capital?

1.3 Significance of the Study

This research provides the Importance and need of the Abbott's performance in Pharma sector in Karachi. This study gives us a in depth analysis about Abbott in pharmaceutical Industry as far as their sales, infrastructure, their inventory modeling and their Warehouses are concern and also helpful for the distributors to make their performance up to the blot and for those who want to run their own business in Pharmaceutical Industry.

2.1 Research Design

Research is design in a way to get as much as information possible within limited time. The main purpose of this study is help to fill significant gaps in existing knowledge about the declining sales of Abbott Pharma in Karachi. Hence it is a Mathematical model and covers all the important aspects related to the matter. The study is quantitative in nature because it requires extensive secondary work to be done. Data will also be gathered through observation and interviews because of quantitative studies have to be undertaken. Further more, other data will be gathered from various sources get the enough information that supports the research objectives. The causal study is also done to find out weather or not the Abbott, gives growth to Pharma Industry in Pakistan. The Unit of analysis in the study is individuals and organization because data is collected from managers, employees and customers and each has to be treated separately and each individual's point of view is focused in the study.

2.2. Research Methodology

Since research is quantitative so, an extensive regression and co-relation analysis will be done. On the other hand. Structured interview and web site visits are used as a research methodology in this study Pharmaceutical those are currently blooming and making striking profits are visited and interviewed for more information..

2.3. Factors of Study

There are some factors which will affect the sales of Abbott in a both positive and Negative manner and these factors are;
✓ Incompetent Supply Chain
✓ Inventory Modeling
✓ Sales forecasting
✓ Cost Handling
✓ Working Capital

3.1 Literature Review

In relation of inventory and sale the paramount observation to manage the stock retail which clearly identifies for a suitable stability among stock and Sales, However, In relation to Inventory, Forecasted Sales also plays a very significant role in Inventory leveling. For Example if Company target is to Sell 100 Units, then their inventory is not more then 120 units and if it shows an excess then Inventory will be blocked and working capital will increase, appreciation of the significance of stock accessibility, and precise lay up sales & Stock data Wilson et al (1995). Consequently, it's astonishing to get that the slight experimental investigation in associations among stocks, sales and examine the retail or logistics prose.

In broad-spectrum, competent or disorganized employees who managed stocks would affect the organizations capabilities. An assortment on further macro-economic, trade and company different aspects is significant as well. Previously, economists are alert in various industries using altitude variables for the recital agenda. Since, hassle the function of business attentiveness and a company's share. Since senior level is equally could be (notionally) connected to privileged abundance. Pragmatic cram also examine other probable determinants, for example, ownership structure of the firm Himmelberg et al., (1999),

Working capital management is significant for the reason that of its consequences on the Organization abundance as well as peril, in addition to it worth (Smith, 1980). Exclusively, operational funds savings absorbs swaps among productivity and peril. Verdict with the aim of apt to amplify growth likely in the direction of augment hazards plus equal assessments so as to center on hazards diminution and liable to diminish impending abundance. Git man (1974) squabble this money adaptation sequence a major feature in managing operational funds. In reality, results regarding inventory that with great deal we can endow in the consumer and stock records and credit limit has been allowed to supplier is reveal within the company's amount transfer sequence and signify standard

quantity of time among engagement while the Organization ought to create and to deliver their suppliers on exact date under it commence the accumulation of payments from its patrons. Working Capital has also a very significant impact on Inventory. If inventory leveling is not conserve then Working capital might be increases. Preceding crams have worn trial in support to cash exchange sequence to examine if curbing this sequence has optimistic or pessimistic belongings happening on company's earnings. Mostly, entrepreneurs said about Working Capital and revenues that effective Working

capital Policies augment Profits for the company this leads to a fact that minimum investment in Working Capital enhances the profit margins. Shin and Soenen (1998).

Lost Sales gives an idea that, to be a newly growing awareness in the supply chain inventory problems. A most important group of this research rivulet has alert on the concern linked with shaping finest inventory allocation policies to achieve higher supply chain performance and High sales volume Ganeshan et al., (2001); Kumar and Chandra, (2002); Lau et al., (2002).

Conceptual Frame Work
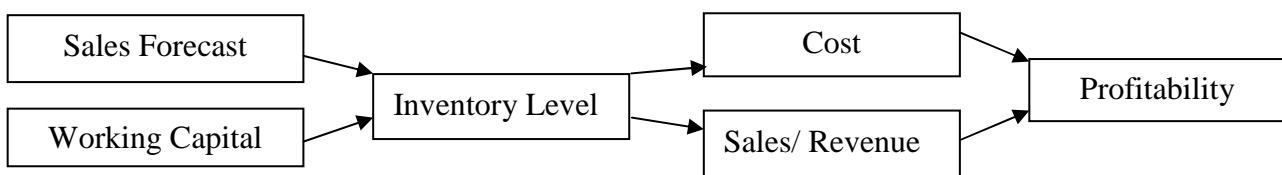
Hence, the above citied framework shows that, Inventory Level is been strike by amateurish Supply Chain because If you don't cope appropriate inventory in your warehouses then it may be exceeded and destroy your Inventory level which holds Carrying and Holding Costs and because of that your Cost increases and encompasses a dreadful outcome on Sales which will diminish your productivity.

Forecasting of Sales is an extremely significant concern for the reason that nearly all the effects will be rely on Prediction, If Forecasting is admirable then Inventory echelon is right up to the mark and if it is inadequately ended then inventory may be surpass or cry off, but in both ways it will give negative impact on sales rather on output as well.

Working Capital will always be sterile until and unless your inventory will be sell on well-timed foundation and if sales are not there then Working capital will be barren and inventory remnants in your warehouses and grasp carrying and holding costs which results as enhance in outlay and bestow a negative brunt on sales and both cost and sales wound profitability.

Supply Chain academic Inventory Model, gives us a comprehensible indulgent about Average Annual demand of every SKU, Forecasting Biasness, Standard deviation of forecasted error Product Cycle time, Safety Stock Cover and Targeted Weeks. This spot is very significant as far as the inventory prospects are concern. If Inventory Planning Model (IPM) gives you a lucid vision about Inventory then your stock, Sales and Profitability will

always ascend but if, it this model will be in-efficiently developed then no worries inventory, sales and profitability will have a very negative impact on the organization.

Hypotheses

To analyze the scope and need of Abbott in Karachi, Following is the Hypothesis which will be assumed in decrease of Sales.

- ✓ Working Capital has an important impact on Inventory Level (H1)
- ✓ Working Capital has not much impact on Inventory Level (H2)
- ✓ Forecasted Sales Plays a Significant role distressing in Inventory leveling (H3)
- ✓ Forecasted Sales Plays a very minor role in affecting the Inventory level (H4)
- ✓ Inventory Level has a Significant association with sales/ Revenue of the Firm (H5)
- ✓ Inventory level has not a Significant impact of Sales/ Revenue of the Firm (H6)

4.1   Data Analysis and Findings

As researcher took the Secondary data from Sales and Inventory access reports of Abbot Located at Landhi area to exploring the effects of Sales and Distribution network of Abbot Karachi, hence the tenure of the data was 2 years, from which analysis will be done on monthly basis with 22 values in all. On the basis of gathered information

researcher develop the models to achieve the objectives of the conducted study.

4.1 Dependency of Sale Forecast and Working Capital on Inventory Level

In this model research try to find the relation between Working Capital and Inventory Level and Sales Forecasting with Inventory Level that how much Working capital and Sales forecasting depends on Inventory level of Karachi Warehouse. So researcher took Inventory Level as dependent variable and Working Capital and Sales Forecasting as Explanatory variable and the model is as:

$Y = \alpha + \beta_1 X_1 + \beta_2 X_2$

Y = Inventory level

X1 = Working Capital

X2 = Forecasted Sale

a = Constant

Model Summary[b]

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	.997[a]	.995	.994	3.448E7	.995	1782.330	2	19	.000

By apply linear regression analysis through SPSS (Statistical Soft ware) research got the following results:

A Predictors: (Constant), Working Capital, Sales forecasting
B Dependent Variable: Inventory Level

R shows the correlation between Inventory level and Forecasting Sales, Working Capital which is equal to 0.997 it shows Healthy positive relationship between these three variables. While R Square shows the amount of variation in Inventory Level due to variation in Forecasted Sales and Working Capital which is equal to 99.4%, while 0.06% variation is due to other factors such as, Seasonal Sale effects, Price Effects, Cost of Product or Services, Bad Marketing strategies etc. .000 shows that it is significant because it is less then 0.05 and does not lie in critical region.

Coefficients[a]

| Model	Unstandardized Coefficients		Standardized Coefficients	T	Sig.
	B	Std. Error	Beta		
1 (Constant)	-4.096E7	8.115E7		-.505	.620
Working Capital	.894	.039	.977	22.885	.000
Forecasted Sale	.520	1.022	.022	.508	.617

a. Dependent Variable: Inventory

$$Y = -4.096 + 0.894\,(X1) + 0.520\,(X2)$$

Unstandardized Coefficients of Constant is -4.096, it means inventory is Inclining persistently with this rate, while the Beta Coefficient or Slop at which the inventory level changes with respect to Working Capital is 0.894 and it means that Inventory level would be highly dependent of Inventory level . If Inventory is poorly managed, Working capital will be increased. Standard error is 0.039.

Which means around 3.9 Observations are not fit to least square line Standardized Coefficient is 0.977 means that's it is highly important. Since, T-Test if 22.85 and hence, Significance Level is still below 0.05 at 95% confidence interval. Therefore, our NUL HYPOTHESIS is rejected and our hypothesis is accepted that inventory level is significantly depending on the Working Capital at 95% confidence Interval.

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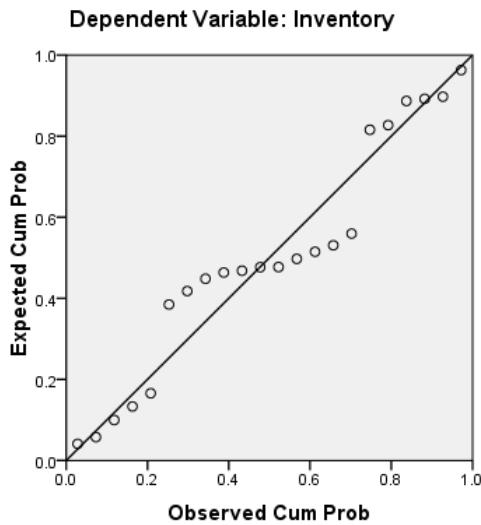
On the other hand, Beta Coefficient of forecasted Sales is 0.52 which means Inventory Level has also affect forecasted Sale. Standard error is 1.022 and T-Test for the allied model is 0.508 and significance level is 0.617 proves the our NUL HYPOTHESIS will be rejected and our hypothesis is accepted that Inventory level is also significantly depending on Sales forecast at 95% Confidence interval. The estimated least square line of equation is:

Normal P-P Plot of Regression Standardized Residual

Dependent Variable: Inventory

Correlations

		Inventory	Working Capital	Forecasted Sale
Inventory	Pearson Correlation	1	.997**	.921**
	Sig. (2-tailed)		.000	.000
	N	22	22	22
Working Capital	Pearson Correlation	.997**	1	.920**
	Sig. (2-tailed)	.000		.000
	N	22	22	22
Forecasted Sale	Pearson Correlation	.921**	.920**	1
	Sig. (2-tailed)	.000	.000	
	N	22	22	22

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

Here, researcher apply the co-relation analysis to analyze the interdependency of Inventory with working capital and forecasted sale will be shown and vice versa.

The dependency of Working capital on Inventory level is 99.7% and dependency of forecasted sale on working capital is 92.1% which is again very high and significance level of 2-tailed test is .000 which is very significant and proves that our NULL HYPOTHESIS is rejected and value does not lie in critical region.

Whereas, Inventory and forecasted sale depends on working capital with a percentage of 99.7% and 92% sale.

with a minimum significance level and again proves that our NULL HYPOTHESIS might be rejected and alternative may be true.

However, Working capital and Inventory is also highly depend on Forecasted

4.2 Sales Vs Inventory

In this model research try to find the relation between Sales and Inventory of Abbot Karachi that's how much

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Sales is depend on Inventory means if there is inventory shortage in Karachi warehouse does, Sales effect or not?

$S = \alpha 1 + \beta_1 X_1$

Y = Inventory

S= Sales

a= constant

b= Coefficient

So researcher took Sales as dependent variable and Inventory as Explanatory variable and the model is as:

Model Summary[b]

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	.388[a]	.151	.108	2.049E7	.151	3.548	1	20	.074

By apply linear regression analysis through SPSS (Statistical Soft wear) research got the

a. Predictors: (Constant), Inventory

b. Dependent Variable: Sales

Hence, R shows the Correlation between Sales and Inventory which is 0.388% and it ia weak relationship between these two variables. Whereas, R Square shows the amount of variation in Sales due to variation in ther variation such as Branding, Product Quality or

Inventory which is equal to 15.1% means that if inventory level is poorly managed it only affect 15 % to sales. While 85% affect due to o

services etc.

Coefficients[a]

Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.
	B	Std. Error	Beta		
1(Constant)	1.793E8	2.456E7		7.302	.000
Inventory	-.019	.010	-.388	-1.884	.074

$$S = 1.793 + (-0.19) \ (Y)$$

Hence, Unstandardized coefficients Constant is equal to 1.793, whereas, the beta coefficient at which the sales is poor with respect to inventory in b= -0.19 means that if Sales is decline it will not have much impact on inventory level. There are some other issues of which Sales are declining like Customer demand, Product quality etc. So, declining Sales is not highly dependent on Poor Inventory

management. Standard error of this model is 0.010 which means that around 1 percent of the observations are not fit to the least square line. Since T-test is -1.884 which is smaller then 1.02 and significance level is 0.074 which is higher then 0.05 proves that our NUL HYPOTHESIS is accepted and values lie in critical region

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Normal P-P Plot of Regression Standardized Residual

Dependent Variable: Sales
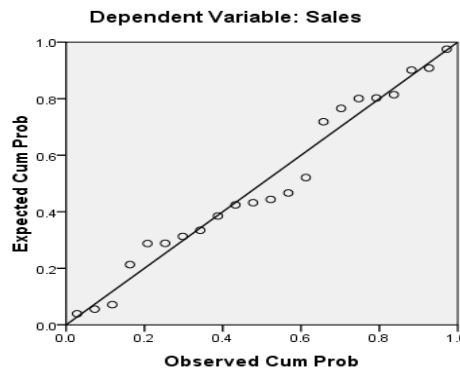
Correlations

		Inventory	Sales
Inventory	Pearson Correlation	1	-.388
	Sig. (2-tailed)		.074
	N	22	22
Sales	Pearson Correlation	-.388	1
	Sig. (2-tailed)	.074	
	N	22	22

A Co-relation analysis will be done by researcher to analyze the trend of Sales with Inventory by taking Sales as a dependent variable and Inventory as a exploratory variable. As far as the sales is Concern. It shows -0.388, negatively co-related with inventory means if Sales are declining, other various factors are behind that. It shows that Sales has no impact on inventory.

Hence, While Concluding "exploring the affected if sales and Distribution Network of Abbott Karachi". We found that

H_1: Working Capital has an Important Impact on Inventory Level

H_2: Working Capital has not much Impact on Inventory Level

H_3: Forecasted Sales plays an important role in Inventory level

H_4: Forecasted Sales plays not much role in inventory level

If we have to look at the relation between of Forecasted sale, working Capital and Inventory level, it is 99.7% which shows that's these variables are highly dependent on each other and R Square is 99.4 which shows that only

While, inventory has also a negative impact on sales and i.e. -3.88 shows that's inventory has also no significant impacts on Sales.

Conclusion and Recommendations

0.06 % factors are others which affects the inventory level. Approximately 99% is working capital and forecasted sale and if we look at Co-relation of these 3 variables it shows .000 % significance which shows that data is highly significant and dependent on each other.

Hence our both HYPOTHESIS are accepted and our all values does not lie in critical region and are Significant so it proves that working capital and Forecasted sale plays a significant role while decreasing or increasing inventory level. Consequently,

H_5:   Inventory Level has a significant association with sales/ Revenue of the Firm

H_6:   Inventory level has not a Significant impact of Sales/ Revenue of the Firm

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After the successful completion of the above part when we look that declining Sales Causes poor inventory management, we are surprised to see that Sales depends only 15.1 % on inventory while R square is still 10.8 % which is not enough to say that Sales is dependent on inventory. When we look the Co-relation it shows a negative impact of
-3.88%. It clearly gives us the idea that there are various other factors on which Sales depends and they are product quality, Customer Demand, marketing and branding etc.

However, if Abbott Karachi scuttles in the same way there in no future prospective growth in Sales and always craft problems such as Inventory level increase and working capital blocked for which extra cost has been paid and when these all things occur profitability of the company will automatically be decreases.

Hence, our values lie in critical region and prove that sales have not any significant impact on Inventory. So, our hypothesis may be rejected and alternative might be true However, we have some recommendations for Abbott, if they work in those areas their profitability can grow up or every aspect will be managed harmoniously.

There are some recommendations; if ABBOTT will work on it they will definitely improve their sales and managing their inventory at optimum level
1. A comprehensive supply chain academics Inventory planning model should be developed which gives us the forecasting biasness, Standard error of Forecasting error. Output reliability, and Quality assurance etc
2. Make policies about working capital that, in those policies we should restrict a company working capital with a certain level for example for January 2011 working capital of Abbott will not increase beyond 100,000 etc.

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