

Analysis on Inventory Turnover Ratio of Select SAP Implemented Pharmaceutical Companies

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Abstract: *Inventory Turnover is one of the important inventory ratio which decides the sustenance and growth of an organization irrespective of size, brand, industry sector, geographical location, usage of technology, working capital management, corporate culture, management decision skills and still many more other factors that influence organization to hold and enhance the market share in the highly dynamic competitive environment. The impact of implementation of SAP technology on the pharmaceutical sector and its inventory Turnover ratio outcome on few select companies located in Hyderabad is emphasized.*

Keywords: SAP, Inventory Turnover Ratio, Pharmaceutical and Inventory

1. Introduction

The inventory turnover ratio is defined as a measure of the number of times the inventory is sold by company during a year. The inventory turnover ratio is a standard measure of an organization operational efficiency in management of assets. Maximizing inventory turnover reduces overhead costs, thus improves the profitability of an organization. Inventory turnover is inversely proportional to inventory holding and is also known as inventory turns, merchandise turnover and stock turnover.

Low inventory turnover is an outcome of overstocking, obsolescence or deficiencies, the product cost goes up due to increase in storage location costs. But in few situations a low inventory turnover is appropriate where higher inventory levels transpire in-anticipation of briskly rising prices or product unavailability due to market shortages.

High inventory turnover indicates insufficient inventory levels, which lead to lost business opportunities. Increasing inventory turns reduces holding costs which in-turn increases net income.

2. Literature Survey

C. Madhusudhana Rao et al., 2009, ITR measures effective utilization of financial resources of the firm and ability of management to use them effectively and efficiently. Ananth Raman et al., 2004, showed inventory turnover cannot be used as performance analysis parameter since increased inventory turnover is proportional to decreased gross margin, which in no way can be interpreted as improved inventory management. Firm expertise to control variance in annual inventory turns is an indication of better management of inventory Aghazadeh, 2009

Gaur et al., 2005, proved inventory turnover is positively correlated with sales and negatively correlated with profit margin percentage, inventory turnover ratio is influenced by

sales surprise, gross margin and capital where varied across different segments of industry. M. Kiracı et al., 2009 determined that there is a positive relationship between inventory turnover and return on assets and net profit margin and a negative relationship between inventory turnover and gross profit margin. Lieberman and Demeester (1997) analyzed the effect of high inventory turnover results in productivity growth and increased profitability

3. Methodology

Objectives

Analyze the performance of select pharmaceutical companies using inventory turnover ratio.

Hypothesis

Three pharmaceutical companies which belong to pharmaceutical industry, that have implemented SAP and are located in Hyderabad were considered for the study.

Null Hypothesis (H_0): There is no significant difference before and after implementation of SAP.

Alternate Hypothesis (H_1): There is a significant difference before and after implementation of SAP.

Data

Sources of Data: Data drawn from the balance sheets of respective companies.

Software

Software Used: The data analysis is carried out using SPSS 16.0 software.

Statistical Tools and Techniques:

Paired t-test: The paired t-test is a statistical procedure confirms whether the mean difference between two sets of observations is zero, it is applied to evaluate the impact of implementation of SAP using inventory turnover ratio, before and after implementation of SAP.

Variables of the Study

Inventory Turnover Ratio (ITR) Inventory turnover is expressed as the number of times inventory is sold in a given period and is defined as cost of goods sold divided by average inventory.

Inventory Turnover Ratio = Cost of Goods Sold/Average Total Inventories at Cost

Scope of Study: Scope of study is confined to 3 SAP Implemented Pharmaceutical companies.

Natco Data obtained from the annual reports of the NATCO Company and the data is considered for the analysis taking into consideration of 6 years before and 6 years after implementation of SAP. NATCO implemented SAP in 2011 hence the financial year 2011 is excluded from analysis.

Neuland Labs Data obtained from the annual reports of the Neuland Company and the data is considered for the analysis taking into consideration of 7 years before and 7 years after implementation of SAP. Neuland implemented SAP in 2010 hence the financial year 2010 is excluded from the analysis.

Dr Reddy Labs Data obtained from the annual reports of the Neuland Company and the data is considered for the analysis taking into consideration of 10 years before and 10 years after implementation of SAP. Reddy Labs implemented SAP in 2007 hence the financial year 2007 is excluded from the analysis.

4. Analysis of Inventory Turnover Ratio (ITR)

Inventory Turnover Ratio states how efficiently a company sells through its products. In general, a high turnover is beneficial as it reflects efficient sales. ITR high turnover is beneficial as it indicates higher sales and higher profits. Standard ITR for all manufacturing ranges from 1 to 2.

Table 1: NATCO Inventory Turnover Ratio

Before			After		
Year	D	ITR	Year	D	ITR
2010	(-1)	1.399	2012	(+1)	1.107
2009	(-2)	2.381	2013	(+2)	1.385
2008	(-3)	2.392	2014	(+3)	0.979
2007	(-4)	2.707	2015	(+4)	0.834
2006	(-5)	2.842	2016	(+5)	1.052
2005	(-6)	3.067	2017	(+6)	1.475

Source: Compiled from the Company Balance Sheet D is Distance from before and after Implementation

From the table 1, it is concluded that after implementation of SAP at NATCO there is a decreasing trend and finally increased in the inventory turnover ratio.

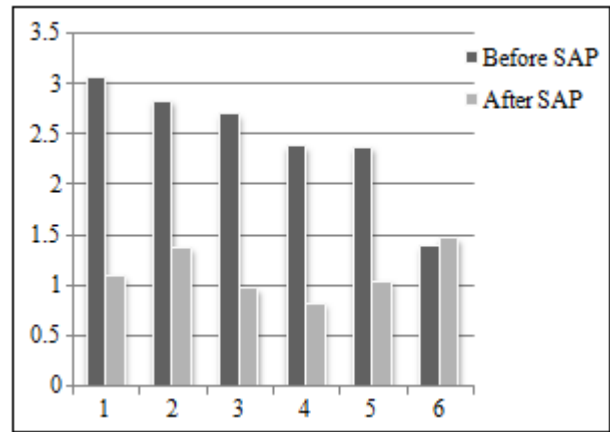


Figure 1: NATCO ITR Graph

	1	2	3	4	5	6
Before	2005	2006	2007	2008	2009	2010
After	2012	2013	2014	2015	2016	2017

Table 2: Neuland Inventory Turnover Ratio

Before			After		
Year	D	ITR	Year	D	ITR
2009	(-1)	3.871	2011	(+1)	4.075
2008	(-2)	3.319	2012	(+2)	3.810
2007	(-3)	3.604	2013	(+3)	3.480
2006	(-4)	3.152	2014	(+4)	3.177
2005	(-5)	2.884	2015	(+5)	3.115
2004	(-6)	2.533	2016	(+6)	2.682
2003	(-7)	1.837	2017	(+7)	2.551

Source: Compiled from the Company Balance Sheet D is Distance from before and after Implementation

From the table 2, it is concluded that after implementation of SAP at Neuland there is a mixed trend in increase and decrease in the inventory turnover ratio.

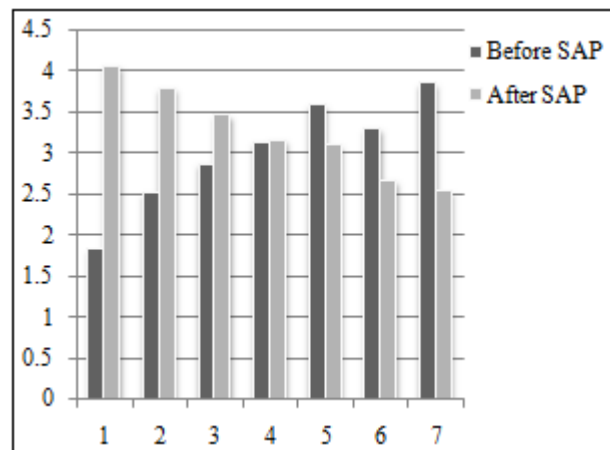


Figure 2: Neuland ITR Graph

	1	2	3	4	5	6	7
Before	2003	2004	2005	2006	2007	2008	2009
After	2011	2012	2013	2014	2015	2016	2017

Table 3: Dr Reddy Labs Inventory Turnover Ratio

Before			After		
Year	D	ITR	Year	D	ITR
2006	(-1)	2.279	2008	(+1)	2.567
2005	(-2)	2.526	2009	(+2)	2.588
2004	(-3)	2.964	2010	(+3)	2.415
2003	(-4)	2.833	2011	(+4)	2.185
2002	(-5)	3.645	2012	(+5)	2.321
2001	(-6)	5.045	2013	(+6)	2.619
2000	(-7)	5.745	2014	(+7)	2.406
1999	(-8)	5.485	2015	(+8)	2.470
1998	(-9)	4.637	2016	(+9)	2.389
1997	(-10)	3.587	2017	(+10)	2.220
1996	(-11)	3.333			

Source: Compiled from the Company Balance sheet
D is Distance from before and after Implementation

From the table 3, it can be concluded that after implementation of SAP at Reddy labs ITR initially increased and then decreased.

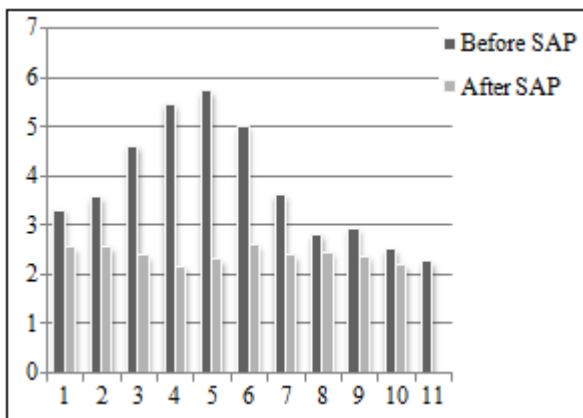


Figure 3: Dr Reddy Labs ITR Graph

	1	2	3	4	5	6	7	8	9	10	11
Before	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006
After	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	

6. Paired t-test Analysis

Table 4: NATCO ITR t and p Value

Variable	Mean	Standard Deviation	t-value	p-value
ITR	Before	2.46467	5.458	0.003
	After	1.13867		

NATCO ITR: The results after applying paired t-test is presented in the table 4, ITR mean before SAP implementation is 2.46467 and after implementation is 1.13867, which shows a decrease in the mean value of ITR after implementation of SAP, thereby indicating increased sales and profits. The ITR standard deviation before implementation of SAP is 0.585122 and after implementation is 0.245206, which shows a decrease in the standard deviation of ITR after implementation of SAP showing the company's expansion. The calculated t-value is 5.458 and the p-value is 0.003. As the p value is less than 0.05, the null hypothesis is rejected. Hence, it is inferred that

the inventory turnover ratio before and after implementation of SAP, the difference is significant.

NATCO high ITR indicates selling of finished goods with little inventory and hence efficient organization performance.

Table 5: Neuland ITR t and p Value

Variable	Mean	Standard Deviation	t-value	p-value
ITR	Before	3.02857	-2.268	0.064
	After	3.27000		

Neuland ITR: The results after applying paired t-test is presented in the table 5, ITR mean before SAP implementation is 3.02857 and after implementation is 3.27000, which shows a rise in ITR mean value after SAP implementation, thereby indicating sales fluctuations. The ITR standard deviation before implementation of SAP is 0.686382 and after implementation is 0.559628, which shows a decrease in the standard deviation of ITR after implementation of SAP showing improved distribution. The t-value is -2.268 and the p-value is 0.064. As the p value is more than 0.05 at 5% LOS and less than at 10% LOS, the null hypothesis is rejected. Hence, it is inferred that the inventory turnover ratio before and after implementation of SAP, the difference is significant.

Neuland low ITR indicates finished goods stocking and hence efficient organization performance. Low ITR reflects stocks are kept for low period of time, sales increased and profits are high which suggests good liquidity position as well as increased working capital funds.

Table 6: Dr Reddy Labs ITR t and p Value

Variable	Mean	Standard Deviation	t-value	p-value
ITR	Before	3.87460	3.643	0.005
	After	2.41800		

Dr Reddy Labs ITR: The results after applying paired t-test are presented in the table 6, ITR mean before SAP implementation is 3.87460 and after implementation is 2.41800, which shows a decrease in the mean value of ITR after implementation of SAP, thereby indicating improved sales and profits. The ITR standard deviation before implementation of SAP is 1.267416 and after implementation is 0.148362, which shows a decrease in the standard deviation of ITR after implementation of SAP showing the company's expansion. The calculated t-value is 3.643 and the p-value is 0.005. As the p value is less than 0.05, the null hypothesis is rejected. Hence, it is inferred that the inventory turnover ratio before and after implementation of SAP, the difference is significant.

Reddy labs high ITR indicated selling of finished goods with little inventory and hence efficient organization performance.

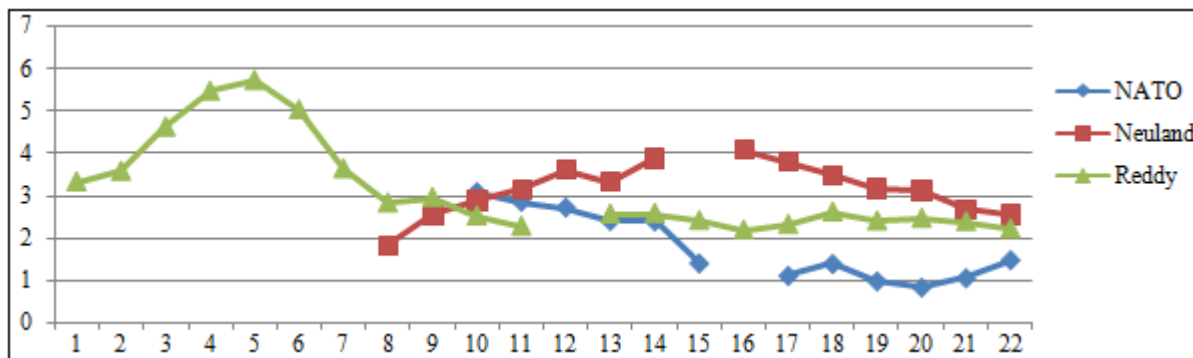


Figure 4: ITR Graph Comparison – Gap indicates implementation year

	1	2	3	4	5	6	7	8	9	10	11
Year	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006
	12	13	14	15	16	17	18	19	20	21	22
	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017

NATCO before SAP implementation, ITR gradually decreased but after SAP implementation ITR maintained the standard value of ITR ratio which indicates efficient inventory management system after SAP implementation.

Neuland before SAP implementation, ITR gradually increased above standard value of ITR ratio but after SAP implementation ITR value decreased and then maintained close to the standard value of ITR ratio which indicates efficient inventory management system after SAP implementation.

Dr Reddy Labs before SAP implementation has high ITR ratio above standard value of and gradually decreased but after SAP implementation, ITR value maintained stability and was seen consistent in ITR ratio close to the standard value of ITR which indicates efficient inventory management system after SAP implementation.

We can conclude from the graph and analyses, Dr Reddy Labs have consistent ITR for all the years post SAP implementation when compared to NATCO and Neuland.

Table 7: ITR Overview Table

Parameter	Significant		
Company	NATCO	Neuland	Reddy
ITR	Yes	Yes	Yes

5. Conclusion

International business arena is dynamic and highly competitive. Organizations to sustain, grow and generate profits need key strategies in efficient utilization of inventory. Moderate inventory turnover help business firms to compete in the global marketplace, provided management uses secured computer SAP systems. Business information systems are therefore important in fulfilling the business requirements because of vulnerable global markets place.

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