PART - III

Chapter - 7

Findings and Suggestions

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FINDINGS AND SUGGESTIONS

This concluding part of the thesis, devoted to main findings and some important recommendations, has been divided into three In the first section, the main and sub-hypotheses formulated to meet the objectives of the study have been narrated alongwith the findings relating to each one of them. of the main findings of the study, it is felt that the NBLS has not been effective in achieving its objectives and the working capital management efficiency has not improved in industries. the levels of industrial inventories have not declined in the country, a survey was taken up to find out the other factors that influence the inventory levels in industries. This insight should be usedful in future efforts to bring about inventory management efficiency in industries. Accordingly, the findings of the survey are presented in section-II and in the Section III, findings and recommendations for a modified system of inventory finance, based on the prognostic model are given.

Section - 1

Main Findings

At the micro level in the industrial sector, the issue of optimum utilisation of various inputs is very significant. Since,

inventory levels in industrial firms have a crucial influence on the working capital management efficiency, rational inventory decisions and effective inventory management are the sine qua non of an efficient firm. However, these decisions are influenced both by demand variables and supply variables. On the supply side, banking policy and credit delivery systems have decisive roles in the levels of inventories maintained by industries. Rational allocation of economic inputs is a critical efficiency factor both at the macro and micro levels in the capital scarce economy of India.

Accordingly, a number of Expert Committees and Study Groups examined various alternative approaches towards improving the Bank Lending Systems for meeting the working capital needs of industries and offered various operational models towards better allocation and utilisation of bank credit.

The Reserve Bank of India after examining them, ultimately decided to break the traditional system of bank lending by implementing the major recommendations of the Tandon Study Group in 1974-75. The New System, based on the Tandon Study Group report and further modified on the basis of Chore Committee Report was expected to improve the working capital management efficiency in industrial sectors especially through efficient inventory control and management by borrowers, under an effective monitoring by lending banks.

How far the radical changes brought about by the R.B.I. in the Bank Lending System for working capital needs of industrial borrowers have really been successful in achieving its objective of working capital management efficiency is a question which has not been answered so far by any systematic enquiry, although some scholars have tried to look into it, sometimes in a different context.

At the outset the temporal behaviour of inventory is examined with the help of a measure of better fit and the impact of NBLS on the levels of inventory is analysed. Inventory to sales relationship shows that significant decline in the level of industrial inventory has not taken place under NBLS. Examining the share of inventory in working capital in incremental terms it is found out that it has declined. But this decline is due to the higher rate of growth in working capital. Thus chargeable current assets are mainly deployed in receivables. On the basis of rise in average collection period and the receivables to sales ratio, it is established that receivables management efficiency has not improved.

For monitoring the levels of inventory, its structural analysis in relation to sales and assets is undertaken. It is deduced that share of raw material has decreased. The share of work in process has marginally declined and that of finished goods has

increased the share of spares is almost constant, but, it is significantly higher than that prescribed under NBLS. To ascertain the relative share of various components of inventory a model has been specified and tested for both the levels of the data and a similar contributory pattern in the structure of inventory is found which corroborates the earlier finding. The behaviour of the structure of inventory is analysed in relation to the norms prescribed for them under NBLS through a 'Point Observation Method' and 'Standard Deviation'. It is established that efficiency in inventory management has not improved to the desired level under NBLS.

Working capital management efficiency is studied under the light of three dimensional identity covering turnover, dependency and matching contribution. This analysis, undertaken with technique, gives the impression that working capital management efficiency has improved. But by examining the movements of the components of working capital, it is established that working capital management efficiency has declined. The factors responsible for this situation are identified and their parameters are estimated. The degree of excess bank borrowing is calculated and with the technique of simple and standard deviations it is proved that inventory finance efficiency has not improved under NBLS.

Working capital management efficiency influence profitability.

The behaviour of profitability in relation to current assets is examined which gives return on assets. This shows a decline. In order to find out the factors governing profitability, an identity is specified in terms of profit margin and turnover. The respective role of each is calculated on the basis of partial derivatives which establish that working capital management efficiency has not significantly improved.

In the study, the following hypotheses were tested to arrive at the foregoing findings:

 ${
m H}_1$ (A) "The level of inventories has significantly come down in the large industrial firms under the NBLS".

Findings : rejected.

H₁ (B) "The receivable management efficiency in Indian industries has improved during the post NBLS period".

Findings : rejected.

"The level of inventories in all the industries is equal to or below the norms prescribed under the NBLS".

Findings: rejected.

"The working capital management efficiency (WCME) in large industrial units in India has improved during the post NBLS period".

Findings: rejected.

'For the same level of sales, gross working capital employed has declined during the post NBLS period".

Findings : rejected.

"The dependence on bank borrowing to meet Gross Working Capital needs has declined under the NBLS".

Findings : sustained.

SH₃ "The ratio of Net Working Capital to Bank Borrowings has increased under the NBLS".

Findings : sustained.

"The Working Capital Management Efficiency of industries, in terms of their ability to safely meet their current obligations has not improved to the desired level".

Findings : accepted.

 $^{
m H}_4$ "Profitablity of industrial firms under NBLS has improved".

Findings : rejected.

Section - II

Other factors influencing Inventory Levels

During the course of investigations it was found that the Bank Lending Policy and credit delivery system do not have an exclusively decisive role in the inventory decisions and inventory levels in industry. There are a number of environmental, organisational and managerial factors which influence inventory levels. Without an appropriate strategy to control them through appropriate models, the desired goal of reducing inventory level and improving working capital management efficiency may not be achieved. Accordingly a survey to identify such non-launching factors was taken up and through appropriate statistical techniques, scales have been assigned to each of the so identified factors with a view to determine their relative influence so as to enable the future policy to consider such factors in designing strategies achieving higher efficiency levels in the field of management. At the outset, the identified problems, appropriately classified, have been narrated briefly and subsequently their relative importance is explained through statistical analysis.

Identified Problems

I. Factors related to General Economic Situation

· a. Inflation

India suffers from perennial inflationary pressure. Prices keep soaring. Price movements are quite heterogeneous and erratic. As a buffer against this phenomenon the industrial units are inclined to have larger stocks on hand. Because of this they try to enter into long term contracts with the sellers. But such contracts have an escalation clause which is beneficial to the supplier and for the buyer it turns out disadvantageous. On the other hand if they make periodic purchases there is room for negotiation and feasibility of sharing the burden of price-rise with the supplier. But due to the frightened behaviour of the purchasers, there is hardly any scope for a favourable bargain for the buyers. As such the over-inventory position leads to increasing carrying cost of inventory which adversely affects the economic order quantity.

b. Bottlenecks in Infrastructural Services for Inventory

Inventory management involves use of certain infrastructural services. Post and telegraphs and other communication facilities, bank services and other financial agencies etc., are some of the illustrations in this regard. If there is delay or non-availability of a particular service the

inventory levels are affected adversely. The industrial units cannot have a dependable prediction about such events. They are treated as eventualities and provisions are made for the same in the form of excessive inventories resulting into undly high carrying cost. Some industrial units try to develop a time schedule for inventories on the basis of past experience, but the erratic factors do not lend themselves to such proviso.

c. Market Instability

Some industrial units reported market instabilities, as their inventory problem. Availability of a particular item of inventory is found to be quite uncertain. Markets for such items turn out to be unstable. There are many reasons for the same. e.g., rumours in the market, changing structure of demand etc. This also leads the industrial units to overstock and suffer from high inventory cost.

d. Labour Unrest

Usually the levels of inventory are the increasing function of capital intensity. As capital intensity increases, production turns out to be more roundabout which necessitates the holding of a larger volume of raw materials, spare parts, etc. In India, labour legislation yields several types of protection to industrial labour. Leadership among

industrial labour is generally found to be pro-socialistic. Hence, there are frequent cases of strikes and non-co-operation by workers. This results into disruption of the production process. To find out a way from this ailment industrial units prefer to install capital intensive plants. Thereby, inventory requirements keep on rising. On the financial position of the unit this does not prove a healthy feature.

II. Government Policy

a. Tax Policy

Inspite of the declaration of a long term fiscal policy, the government budgets have a variety of tax proposals and It is difficult for the industrial units to impositions. foresee the tax structure and adapt its business bahaviour accordingly. Prior to a particular budget presentation, there are a number of market gossips. leads This the industrial unit to pile up large volumes of inventory as safeguards. Sometimes the suppliers with an intention of charging higher prices on the basis of mark-up pricing, policy, withhold the stock of goods. In the competitive markets this will impair their goodwill. Hence, they are to have larger stocks on hand.

b. Industrial Policy

Industrial policy announcements are found to be inconsistent in some cases. Government may permit certain industries to import raw material. But after sometime, this permission is withdrawn and they are acquired to depend on the domestic sources of raw material. Such a stand is palmed off under the pretext of import substitution without looking into the cost consequences of the same. Sometimes the domestic material does not prove upto the mark.

c. Inconsistent Freight Policy

In order to give fillip to certain modes of transport some concessions are declared. For example, in case of Air India 15 percent concession is provided in freight charges. But Air India does not have a worldwide network. It becomes, imperative for the industrial units to transport the material from the place of purchase to the nearest place of Air India network. For this transport concession facility is denied. This has a disincentive effect on the industrial unit.

d. Impractical Import Licencing Policy

Certain industrial units have launched massive projects under the cover of import substitution policy. Government, while deciding upon the sanction and issue of the import

licence does not take in to account the production levels of such domestic suppliers. Due to the import licences issued to the other industries which make use of imported raw material the industries producing it domestically suffer from overfilling of stock.

e. Customs Policy

The import duties have different rates. Dutiable items are also of different types. Therefore, the industrial units are not in a position to estimate the tax burden accurately. Generally import duties are icreased frequently, the cost structure and the price of the product is affected accordingly. The unit suffers from the distorted cost structure. The financial estimates prove to be wrong and the corporate planning meets with failure.

f. Harbour Policy

Certain products are treated as hazardous and are not allowed to be loaded directly onto the dock. There is midstream anchoring of the vessel from where such cargo is brought to the shore by smaller boats. There is nothing wrong in doing so. But the guarantee of continuous availability of such services is not provided. Therefore, many times there is rise in cost due to delayed unloading of the vessels in mid-stream through the barges due to the strike of the steward.

III. Internal factors

a. Built-in Cost Structure

Certain industries have built-in cost structure because the fall in the demand for their products makes it necessary to preserve the products. The preservation cost remains at the former level, eventhough the raw material purchases are on the down swing and their preservation cost keeps on declining. Therefore, the inventory carrying cost remains at a higher level.

b. Unskilled Management

During investigation it was found that certain units did not have trained and qualified managerial cadre for undertaking the inventory control. Most of them, in such cases, either go for unreasonably large volumes of inventory holdings or inadequate synchronisation of the inventory decisions with respect to the various items, order quantities and order time intervals.

c. Difficulty of Timely Finance

In order to purchase inventory in time it is necessary to have demand requisitions from the respective departments of the units and estimating the financial requirements thereof. Due to legacy on these counts finance could not be obtained in time, quite often the applications for

financial facilities are not lodged in due order and time.

Thirdly, the sources of finance do not entertain such applications promptly and in right perspective.

Relative Importance of Identified Problems

In order to ascertain, relevant information was sought on the five point scale. The following table contains the code numbers alloted to each of the identified factors.

Table - 7.1 List of Factors

Sr.No.	Factors identified	Code No.
I.	Factors related to general economic situation:	
	A. Inflation	X-1
	B. Bottleneck in infrastructural services	X-2
	C. Market instability	X-3
	D. Labour unrest	X-4
II.	Government Policy:	
	A. Tax Policy	X-5
	B. Industrial Policy	X-6
	C. Inconsistent freight policy	x-7
	D. Impractical import licencing policy	x-8
	E. Customs policy	X-9
	F. Harbour policy	X-10
III.	Internal Factors :	
	A. Built-in cost structure	X-11
	B. Unskilled management	X-12
	C. Difficulty of timely finance	X-13

The scores that have been assigned to each of the factors emerging from the scaled responses are presented in the following table.

On the basis of the scaling technique, the scores for the identified factors were obtained and are presented in the following table.

Table - 7.2 Scores for the identified factors

Sr. No.	Factor Categor		Not Respo- nded	Highly Respo- nsible	Respo- nsible	Less Respo- nsible	Not Respo- nsible	Not Known
1.	I A	X-1	-	36	5	6	2	1
2.	IB	X-2	-	10	8	32	1	1
3.	I C	X-3	-	6	10	5	25	4
4.	I D	X-4	_	8	28	5	4	5
5.	II A	X-5	5	20	10	8	5	2
6.	II B	X-6	8	7	13	10	8	12
7.	II C	x-7	22	2	3	8	10	5
8.	II D	X-8	25	6	2	7	4	6
9.	IIE	X-9	28		4	2	10	6
10.	II F	X-10	35	****		5	3	4
11.	III A	X-11	3	31	8	4	3	1
12.	III B	X-12	16	4	2	4	2	22
13.	III C	X-13	-	38	10	_	-	2
			\$					

After understanding the response scores, an effort has been made to ascertain the sequence of monitoring priority of the identified factors by using the weighted scaling technique applied through the following formula:

$$W_{I} = \underbrace{\sum_{i=1}^{n} (x_{i} - x_{i})}_{\mathbf{G} x_{I}^{2}}$$

Where,

 W_T = Weightage index of X_i variable, $i = 1, 2, \dots, 13$

 x_i = Respective score on the variable in the column showing the identified variable.

 \overline{X} = The mean value of the score of the said variable.

 X_{τ}^{2} = Variance of the score of the respective variable.

n = Number of observations

On the basis of the weighted score matrix, the relative significance of the variables is worked out which is presented in the following table:

Table - 7.3 Relative Significance of the Inventory Problem

Problem		Significance (in percentage)
X-1		22.4
X-2		8.6
X-3		10.2
X-4		1.6
X-5		1.2
X-6		1.3
x-7		2.5
X-8		7.4
X-9		9.2
X-10		5.2
X-11		1.2
X-12	,	19.8
X-13		8.4
	TOTAL	100.0

To test the statistical validity of the relative significance of the factors obtained, 't' test is administered by using the following formula:

$$= \frac{\overline{x} - N}{... 50}$$

Where,

X = Mean value of the score for respective
 problem.

= Mean value of the problem having no rank in the relative significance.

= Standard deviation of the said score.

The 't' value obtained are aggregated and the mean figure is derived which is 5.94.

The table value of 't' at four degrees of freedom and five percent level of significance is 2.132. Hence, observed value is higher than the table value, so their relative significance is valid.

section - III

Prognostic Operational Model

As pointed out earlier, the study reveals that the New Bank Lending System has not been effective in achieving one of its main objectives of ensuring a high degree of current asset management efficiency in Indian industry. Although, some decline in the overall inventory levels over a period o fourteen years is visible, the inventory levels are still high compared to most of the efficient economies in this regard. This calls for a need to evolve an operative model with prognostic utility to identify the variables which can be useful as tools for monitoring the level of inventories in industry.

The proposed model should enable us to test the statistical significance of contributory variables in the inventory level which has been interpreted as a mean and find out the relative significance of these variables as policy parameters for the prospective borrower and the banker as a lender. The model, thus provides an alternative basis for monitoring the funds employed in inventory and thereby, provides a dependable criteria for decision making by the commercial banks with regard to industrial inventory finance.

The New Bank Lending System, has concentrated on current assets, current liabilites and the matching contribution. On ex ante approach is needed to monitor the levels of demand and supply of inventory finance for achieving financial discipline. Having due regard to the above, the proposed model may be given as:

Model:

EIF = f(lr, Lf, Os, Cs, T)

where EIF = Economic Level of Inventory finance which is
interpreted as a mean value of inventory:

Lr = liquidity ratio

Lf = long term funds

Os = order size of inventory

Cs = cash sales

T = technological factor

The technological factor has been interpreted as a lagged variable expressed in terms of funds blocked in inventories.

For estimation of the model, the following form is specified:

Both the deopendent as well as the independent variables are expressed in the following matrix form:

	Y0						
хо	х 11		X 12		X 13	X 14	X 15
	X 21		X 22		X 23	X 24	X 25
		† 1 1		1 1 1			
	· X 41		X 42		X 43	X 44	X 45

The model is estimated at the aggregate as well as sample levels for the time-period covered by the study and is estimated in the incremental form due to the dynamic nature of the problem. Accordingly, the variables are quantified in the index form. The indices for the rates of development, as used by Hemlatta Rao, have been adapted using the vector form for handling the data for both the levels.

The index of variables is defined as:

$$I_{it} = \underbrace{\frac{a \ x_{i1} - \overline{x_{1}}}{\S x_{1}} + \underbrace{\frac{b \ x_{i2} - \overline{x_{2}}}{\S x_{2}} + \underbrace{\frac{c \ x_{i3} - \overline{x_{3}}}{\S x_{3}} + \underbrace{\frac{d \ x_{i4} - \overline{x_{4}}}{\S x_{4}}}$$

$$\underbrace{\S x_{1}}{\S x_{2}} = \underbrace{\frac{n}{\S x_{2}}} = \underbrace{\frac{m}{\S x_{1}}} = \underbrace{\frac{m}{\S x_{1}}}$$

Where -

xis = the respective variable for which the index is
to be computed.

 $\bar{x}\bar{s}$ = the respective mean figures.

 $lx_is = refers$ to the absolute change in the values of x s between two consecutive points of time.

In order to make indexing of the variables considered for estimating the parameters, the vector form is used which is of the following nature:

$$\begin{bmatrix} x & x & x & x & \dots & x \\ 1t & 2t & 3t & nt \end{bmatrix}$$

The co-efficients are estimated for aggregative as well as sample data, using the ordinary least square (OLS) techniques, and are given in the following table:

<u>Co-efficient</u>	Aggregative data	Sample data
a	0.728	0.827
b	0.192	0.172
c	0.295	0.309
đ	0.283	0.360
е	0.031	0.842

It is evident that the value of the co-efficient of liquidity ratio is 0.827 and 0.728, for sample data and aggregative data, respectively. It implies that in terms of comparative static approach, this variable has almost 83 per cent to 73 per cent role in variability of economic level of finance for inventory Long term funds variable has contributory impact variable. to the order of 19 per cent to 17 per cent respectively for the two types of data. Therefore, an inference emerges that long term funds have a marginal contribution relatively in the economic level of inventory finance. The contribution of order size is 31 per cent to 30 per cent respectively in two types of data. Hence, it is evident that order size has comparatively lesser effect on economic levels of inventory finance. sales of the industrial units generate 36 per cent 28 per cent impact on variability in the economic levels of finance. The technological factor in the lagged form does not have a decisive say being 3 per cent and 4 per cent in the respective levels of data.

The exercise highlights the role of major factors which contribute towards Economic level of inventory finance. The banks can tune their lending policy in the light of the respective values and weightages of these variables for potential borrower. Secondly, the industrial units can also make an

effective attempt to achieve and maintain the economic levels of inventory finance by manipulating these variables.

The estimation of the model is based on the time series data only. Therefore, there was a problem of serial co-relation. To overcome this problem, the co-efficients are estimated for aggregative as well as sample data. After computing the variables in the index form, pooling of cross-section data with time series data was attempted. This has helped in reducing the effect of time factor on one hand and those of economies or diseconomies of size of the industry on the other hand. This exercise is undertaken with the help of row and column operations. In this method, a particular variable is taken in two dimensions, viz, time and position of the unit at a point of time. For each variable a cut off point is worked out with the help of the discriminant function, which is specified as:

$$Zi = aXi + vYi$$

· where -

- Zi = particular independent variable, which refer
 to the five xi's as specified in the study.
- Xi = the time deviation is column wise mean
 deviation of that variable.
- Yi = position wise mean deviation is row wise mean deviation.

In order to derive the cut-off point to minimise the possibility of misclassification, the variance form is used in which the following formulas are applied:

$$a. \int_0^2 x + b \int_0^2 xy = dx$$

$$b. 6xy + b6^2y = dy$$

Solving these two normal equations, we get -

$$a = \frac{\sigma^2 \times dx - \sigma \times ydy}{\sigma^2 \times \sigma^2 \times \sigma^2 \times \sigma^2}$$

$$b = \frac{\sigma^2 ydy - \sigma \times ydx}{\sigma^2 \times \sigma^2 \times \sigma^2 \times \sigma^2}$$

$$b = \frac{\sigma^2 ydy - \sigma \times ydx}{\sigma^2 \times \sigma^2 \times \sigma^2}$$

Where -

 6^2x = varince of x

 $\int xy = covariance of x and y$

 $\kappa^2 y$ = variance of y

dx = difference between mean values of x for
 the 2 groups.

dy = difference between the mean values of y
 for the two groups.

On the basis of the parameters estimated for the Discriminant function for each variable, the cut-off points were determined for each type of data. Cut-off points help in the estimate of such a figure for the variable that has minimum possibility of misclassification in pooled data approach. In the light of the cut-off poiants and the index form of variables, the specified model is estimated, for aggregative data as under:

EIF = 3.6121 + 0.0892 Lr + 00772 Lf + 0.1631 Os + 0.298 Cs +0.031 T
$$(0.561)$$
 (0.402) (2.619) (2.97) (1.23)

For the sample data it is estimated as under:

$$yij = 4.7610 + 0.0982 Lr + 0.0802 Lf + 0.1382 Os + 0.3303 Cs + 0.021 T$$

$$(0.533) (0.334) (2.528) (3.25) (1.01)$$

$$R^{2} = .96$$

Figures in the bracket indicate t values.

The intercept co-efficient speaks for the fixed component of inventory during the time period under investigation. It speaks for the inventory values which are iconoclastic with respect to the variables identified in the model. On sample level it is 9.8 per cent and on aggregate level it is 8.9 per cent. marginal difference in the contributory role of this variable is attributable to the aggregation, which to a certain extent affects the liquidity ratio in the downward direction. co-efficient of long term funds variable has almost 7 per cent This is resulting from including role on aggregative level. the enterprises with levels of long term funds. The contribution of order size is 14 per cent on sample level and 16 per cent on aggregative level. The role of cash sales is 33 per cent and 30 per cent respectively. The role of technological factor is 3 per cent and 2 per cent respectively for aggregate level and sample level. This is obvious to the due fact technological factors operate less effectively in the short

period. The value of R² being 0.96 and 0.89 for respective type of data analysis, establishes that there is statistical significance of appreciable nature in the estimated model. For inventory finances, the banks should take into account the variables spelt out in this exercise rather than depend on simple accounting procedures.

Inflation influences the levels of industrial inventory in terms of money value. Hence, it is argued that the banks should accord consideration for this variable, while deciding the limits of Industrial inventory finance as a component of working capital finance. Hence, in this section, an attempt is made to quantify the effects of inflation on inventory size by testing the following hypothesis:

Hypothesis

Inflation is an important contributory variable in the growth rate of industrial inventory.

To test hypotehsis, net present value of inventory is obtained with the help of deflautors which are drawn from the discount factor tables. These tables are bivariate having time and cost dimensions.

The results obtained, for the function are as under:

Undjusted:
$$y*t = 192.7 (0.3505)^{0.9601} t$$

D = 0.1384 .. (t=1983-84 to 1987-88)

0.9558

Adjusted : y*t = 167.8 (0.3951)

D = 0.1077 .. (t= 1983-84 to 1987-88)

In this estimate the constant component is 167.8, while the time variable parameter is 0.96 with the base of 0.3951. These together yield the growth rate of inventory in the degree of variability.

Looking to the above results, it is clear that adjusted or unadjusted estimates do not have great variations. It implies that either there is a built-in adapter in the form of esclation clause in the inventory transactions or the industries might be replenishing the inventory in a somewhat uniform pattern. It is thus, established that the perspective of business decisions adapt to the impact of this variable. Therefore, a lending policy of commercial banks need not consider the inflation arguement additionally, and the aforesaid hypothesis is rejected.

To conclude it may be observed that the new Bank Lending System has not been adequately effective in achieving its main objectives. A number of other non-banking factors have also demonstrated their influence on the inventory levels. On this basis it can be infered that banking control variable in isolation may not be expected to bring about transformation in inventory management systems affecting their levels. There is need for

integrating banking and non-banking varibles, if efficiency levels in the field of inventory management and working capital management are to improve. This study having a defined limited scope and object, is not in a position to provide a comprehensive multifactor model for future implementation. However, the insight provided by fingings may be useful to move ahead in the above direction.

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