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ABC Analysis of Statue of Unity under Larsen & Toubro Limited in Gujarat

Abstract

Inventory management is one of the most concerns item in any company. This study is based on analysis of inventory management of Statue of Unity by Larsen & Turbo Limited (L&T Ltd.) in Gujarat. Theoretical methods of inventory management state how one should use these tools in order to have adequate inventory management. Study has focused on accuracy of inventory management in constructing Statue of Unity by company.

This study has been carried out to compare the inventory management in constructing Statue of Unity with various method of inventory management like ABC analysis etc.

Keywords: Inventory Management, Statue of Unity, ABC Analysis, L&T Ltd. etc.

Introduction

Each business needs inventory for smooth running of its activities. The investment in inventories constitutes the most important part of working capital in the most of undertakings. Thus, it is very essential to manage and control the inventories skillfully. The main purpose of inventory management is to ensure availability of material in enough quantity as and when needed and also to reduce investment in inventories.

Inventory Management

Inventories are current assets of the firm and require investment and thus involve the great attention. The inventories are integral part of firm's operation and these current assets should not be viewed as idle assets. But the dilemma usually is as to how much inventories be maintained by manufacturing concern? If the inventory size is too big, they block the funds and if the inventory size is very small, the firm may lose the sales. Therefore the firm must have an adequate level of inventory. The basic financial trouble is to ascertain the proper level of investment in the inventories and to specify how much inventory must be held during each period to maintain that level.

Methods of Inventory Management

Effective management of inventory needs a successful control system for inventories. An effective inventory control not only helps in solving the serious problem of liquidity but also causes substantial reduction in the working capital and increases profits of the concern. The following are well known methods of inventory management and control:

1. ABC Analysis
2. Fixation of Safety Stocks.
3. Economic Order Quantity
4. Fixation of Stock Levels
5. Just in Time Inventory
6. XYZ Analysis
7. VED Analysis etc.

Larsen & Toubro Constructions

L&T Construction is the largest construction organization in India and ranked among the world's top 30 contractors, has been over the past seventy years transforming cityscapes and landscapes with structures of immense size and splendour. This company has been a giant in construction line. Capabilities of the company span the entire spectrum of construction like civil, electrical, and mechanical, instrumentation engineering and its services extend to all core area of industries and infrastructure projects.

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Today, more and more structures beyond India's boundaries are standing tall just because of L&T Company. Statue of Unity is the latest addition to its pride. Many of the country's prized landmarks like edifices, airports, industrial projects, structures, flyovers, water and power infrastructure projects mark L&T's signature of excellence in construction.

Project of Statue of Unity

The project was first introduced in 2010 and the construction of statue commenced in October 2013 by Larsen & Toubro, who received the contract for Rs. 2,989 crore (US$420 million). Indian sculptor Ram V. Sutar has designed the Statue of Unity and Indian Prime Minister Narendra Modi inaugurated on 31 October 2018, on the occasion 143th anniversary of Patel's birth.

The Statue of Unity is a gigantic statue of Indian freedom fighter Sardar Vallabhbhai Patel (1875–1950) who was the first Home minister of independent India and the closest of Mahatma Gandhi during the non-violent movement for Indian Independence. It is located in the state of Gujarat, India.

It is the tallest statue with a height of 182 meters (597 ft) in the world. It is made on a river island facing the Sardar Sarovar Dam, 100 kilometer southeast of the city of Vadodara on river Narmada in Kevadiy Colony.

Review of Literature

Inventory management is considered as major concerns of every organization. In inventory holding, many steps are taken by managers that result a cost involved in this row. This cost may not be constant in nature during time horizon in which perishable stock is held.

To investigate on such a case, *Taygi* (2014) proposes an optimization of inventory model where items deteriorate in stock conditions. In this paper, based on a real-world case study for a municipal district in Tehran, a multi objective mathematical model is developed for the location-distribution problem. The proposed model considers the role of demand in an urban area, which might be affected by neighbor wards. Integrating decision making process for a disaster helps to improve a better relief operation during response phase of disaster management cycle.

Chatterjeea and *Chakraborty* (2014) say, it is observed that although the performances of these six methods are almost similar, ORESTE method slightly outperforms the others. It is particularly applicable to those situations where the decision maker is unable to provide crisp evaluation data and attribute weight. Ulrich and Pearson (1998) introduce approaches for the integration of the Quality Function Deployment method as well as feedback with system components for computer aided product development. The integration is based on information models representing product, process and factory information.

Leber (2014) reports the results of a survey on the use of innovation management techniques with the potential to improve effectiveness of new product development, and customer satisfaction. Failure mode and effects analysis was found as the most applied IMT in Slovene firms with the highest perceived utility potential to reduce development costs and improve customer satisfaction.

Cheng (2013) proposes a multi-objective production planning optimization model based on the point of view of the integration of production planning and control, in order to achieve optimization and control of enterprise manufacturing management.

Vendanand Sakthidhasan (2010) addresses the application of lean manufacturing concepts to the continuous production sector with a focus on the motor manufacturing industry. The goal of this research is to investigate how lean manufacturing tools can be adapted from the discrete to the continuous manufacturing environment.

Data Collections Sources

Secondary data has been used for the purpose of carrying out this project.The information has also been taken from the official website of Larsen & Toubro company. Other sources of information such as company brochures, management books, newsletters, journals etc. have been referred while carrying out the project.

Scope and Coverage

This study is on the inventory management of Statue of Unity project. However it is limited to only Project and Machineries Department (P&M Department) of L&T of year 2018. The coverage of the project is limited to only the Statue of Unity Project, which was undertaken by L&T as a contract based project.

The study will be limited to online stock report of Project & Machineries department for the financial year 2018-19

Objectives of The Study

The objective of this study is to find out in the best possible manner whether the inventory management of L&T's Inventory of Project and Machineries department is significantly differ from the standard Inventory Management Techniques or not.

Limitations of the Study

The following limitations can be faced while carrying out the project-
1. Analysis of inventory management is based on only ABC analysis.
2. The project design can be compromised due to chances of lack of obtaining essential data from the company.
3. The study is limited to only one department of the entire project of Statue of Unity. The results and conclusions will only apply to a particular department, rather than holistic analysis of L&T.

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Data Analysis and Interpretation
ABC Analysis

The ABC analysis is a business term used to define an inventory classification technique often used in materials management. It is also known as Selective Inventory Control. Policies based on ABC analysis:

A ITEMS: very tight control and accurate records
B ITEMS: moderate controlled and good records
C ITEMS: simplest controls possible and minimal records

Thomas E Vollmann observes, "The ABC analysis provides a mechanism for identifying items that will have a significant impact on overall inventory cost while also providing a mechanism for identifying different categories of stock that will require different management and controls." The ABC analysis suggests that inventories of an organization are not of equal value. Thus, the inventory is grouped into three categories (A, B, and C) in order of their estimated importance.

'A' items are very important for an organization. Because of the high value of these 'A' items, frequent value analysis is required. In addition to that, an organization needs to choose an adequate order pattern (e.g. 'Just- in- time') to avoid excess capacity.

'B' items are important, but of course less important, than 'A' items and more important than 'C' items. Therefore 'B' items are intergroup items.

'C' items are marginally important.

This method helps in keeping close control on costly stock in which large amount of capital has been invested.

After collecting the inventory data of Statue of Unity Project, of the year 2018, we observe that there are 799 items in the Project and Machinery Department of Larsen & Toubro, which would be difficult under study. Hence a random sample of 100 items is selected from list of inventories as a sample under study. Special items that are highly expensive are excluded from the study to avoid large deviations.

The Table 1, shows the standard with which we'll compare the actual results after doing the ABC Analysis of the Stock available in the data. As per ABC Analysis, the data collected should match these following standard conditions-

-60 % of the total value of stock should be equal to 20% of total number of stock available. This would represent the items under 'Class A'.

-20 % of the total value of stock should be equal to 20% of the total number of stock available. This would represent the items under 'Class B'
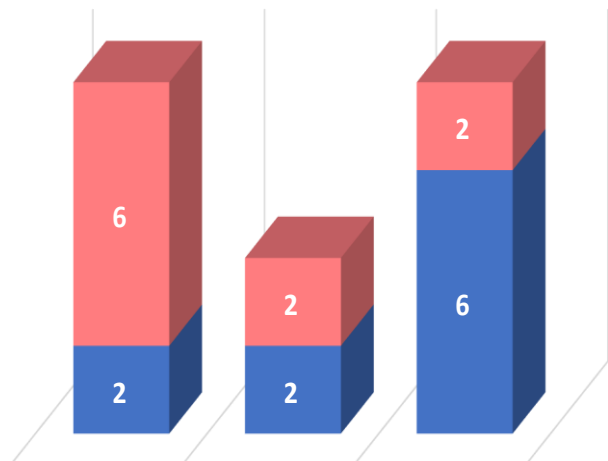
-20 % of the value of stock should be equal to 20% of the total number of stock available. This would represent the items under 'Class C'.

The conditions mentioned above, can be represented as below-

Table 1- *ABC Analysis Class*

ABC Class	Number of Items	Total amount required
A	20%	60%
B	20%	20%
C	60%	20%
Total	100%	100%

Fig. 1, ABC Analysis Class

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The following chart represent the various levels of classes under which the stocks are categorized according to their value contribution in the total value of stock.

SI no.	Material Code	Material Name	Stock (Nos.)	Stock %	Rate (INR)	Value (INR)	Value %	Class
1	9N1U20261	FINISH COUPLING NIB / /FC00050000 /	22	0.64%	3504.55	77100.10	12.47%	A
2	9CL350003	DELIVERY TUBE / /10171207 /DN 125 745MM	19	0.56%	2605.43	49503.17	8.00%	A
3	9NJ410049	UPPER BALL GRIP /908 /908/	13	0.38%	2651.00	34463.00	5.57%	A
4	9MT680191	Gear Oil Tivela S 150 /Hoist winch gear box /H6103287 /	40	1.17%	857.20	34288.00	5.54%	A
5	9UA320120	OIL FILTER KIT /FILTER ASSY /010440229 /	6	870.63	5223.81	31342.86	5.07%	A
6	9NJ410026	UPPER BALL GRIP /708 /708/	15	0.44%	1687.00	25305.00	4.09%	A
7	9CB610214	SPRING//60029754/	18	0.53%	1375.96	24767.28	4.00%	A
8	9CB610275	WEARING PACKING//60073424/	16	0.47%	1472.72	23563.52	3.81%	A
9	9N1U20226	HARDEN PLATE -FIXED BLADE/FIXED BLADE /320133000000 /	15	0.44%	1514.50	22717.50	3.67%	A
10	9QC810018	RUBBER COVER FOR V.SCREENB380 T 700006230F LT1100	75	2.19%	266.68	20001.00	3.23%	A
11	9CB611118	COUNTER SMALE SCREW 60101636	31	0.91%	596.33	18486.23	2.99%	A
12	9Y2130282	*Lug Stowage//6944432/	36	10.95	394.20	14191.20	2.29%	A
13	9UC330009	COPPER BRAZING ROD /COMPRESSOR /1011 /	19	35.6	676.46	12852.74	2.08%	B
14	9CB614890	PU Tube /Pneumatic System /80201286M /12mm	74	2.16%	143.84	10644.16	1.72%	B
15	9CB610851	COUNTER SUNK SCREW / /60095661I/ 60095661(I)	64	1.87%	160.40	10265.60	1.66%	B
16	9MHN60094	Screw M6S 16x60 -8.8-fz /TIE/3000071632/	80	2.34%	120.60	9648.00	1.56%	B
17	9NJ410027	BAR FOR SCREW /710 /710/	50	1.46%	192.80	9640.00	1.56%	B
18	9CL340844	TUBE SUPPORT DN 125//10038880/	26	0.76%	309.96	8058.96	1.30%	B
19	9NJ410021	PROTECT.SLEEVE / /702/702	15	0.44%	530.20	7953.00	1.29%	B
20	9CL340166	SEALING 5 1/2"//10002526/	55	1.61%	134.43	7393.65	1.20%	B
21	9N1U20278	GALVANIZED C'SNK HD.SCREW/ /FNBL0301 /	88	2.57%	77.71	6838.48	1.11%	B
22	9NJ410057	SEALING RING / /920/ 920	50	1.46%	132.55	6627.50	1.07%	B
23	9NJ410059	SCRAPER RING / /922/ 922	48	1.40%	132.55	6362.40	1.03%	B
24	9NJ410054	INTMDTE RING /915 /915/	25	0.73%	253.05	6326.25	1.02%	B
25	9NJ410070	T-PIECE / /939/939	30	0.88%	183.16	5494.80	0.89%	B
26	9CL340048	CHEESE HEAD SCREW DIN 912/ M 12 x 45 - 8.8 - A2C/10001193/	56	1.64%	91.13	5103.28	0.83%	B
27	9N1U20381	Coupling Return Spring /Bar cutting /FC00220000 /	21	0.61%	236.13	4958.73	0.80%	B
28	9CB611117	COUNTER SMALE SCREW 60101635	94	2.75%	52.10	4897.40	0.79%	B
29	9NJ410037	SEALING RING / /720/ 720	50	1.46%	96.40	4820.00	0.78%	B
30	9HT471507	REAR WHEEL BRAKE CAM BUSH 257342303404	33	0.97%	141.97	4685.01	0.76%	C
31	9MHN60095	Nut Mutter M6M 20 -8.-fz /TIE/3000081126/	56	1.64%	80.40	4502.40	0.73%	C

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32	9CL350660	COMCERTINA WALLS SDS 100 /OUTRIGGER/10202596/	20	0.58%	216.48	4329.60	0.70%	C
33	9NJ410041	BALL RETAINER /725 /725/	50	1.46%	84.35	4217.50	0.68%	C
34	9N1U20476	CSK.HD.SCREW (BLIND PLATE/ /FNBL031800 /	92	2.69%	43.70	4020.40	0.65%	C
35	9NJ410020	ADJUSTING SCREW / /701/701	15	0.44%	265.10	3976.50	0.64%	C
36	9N1U20536	Soc. HD. Cap Screw /Moving Blade/2030101GRLHL0/	25	0.73%	154.38	3859.50	0.62%	C
37	9MHN60050	Screw /Passenger hoist support /3000071545/	20	0.58%	160.80	3216.00	0.52%	C
38	9N1U20280	SOCKET HD. CAP SCREW / /FNBL0041 /	24	0.70%	133.75	3210.00	0.52%	C
39	9NJ410029	VALVE COMPLETE / /712/712	20	0.58%	156.65	3133.00	0.51%	C
40	9CB611365	Hex Screw /Mixing arm cpl. T 1000 /10000978 /	26	0.76%	116.89	3039.14	0.49%	C
41	9N1U20524	Conn.rod set. plate screw//FNBL0044/	26	0.76%	116.50	3029.00	0.49%	C
42	9N1U20484	Screw / / FNBL0032 /	15	0.44%	187.50	2812.50	0.45%	C
43	9NJ410035	SEAL / /718/ 718	50	1.46%	54.22	2711.00	0.44%	C
44	9N1U20277	COUPLING NIB THRUSTSPRING/ /FC00060000 /	16	0.47%	167.18	2674.88	0.43%	C
45	9HT111623	Fuel Filter 0.5 ltrs. Dua/l Mico/F3952100/	14	0.41%	189.24	2649.36	0.43%	C
46	9CB640105	PU tube dia 8 / /80201320 /	40	1.17%	65.00	2600.00	0.42%	C
47	9CB611551	Counter Shunk Screw / /60080342 /	16	0.47%	145.64	2330.24	0.38%	C
48	9N1U20059	SOC.HD.CAP SCREW MOV.BLAD/ /030101GRLHLO /	15	0.44%	149.38	2240.70	0.36%	C
49	9NJ410031	STEEL ELBOW / /713/ 713	20	0.58%	108.45	2169.00	0.35%	C
50	9NJ410023	BALL RETAINER / /705/705	25	0.73%	84.35	2108.75	0.34%	C
51	9CL210107	SEALING DN125 1/2" / /10002526 /	14	0.41%	145.09	2031.26	0.33%	C
52	9NJ410034	SCRAPER RING / /717/ 717	50	1.46%	38.56	1928.00	0.31%	C
53	9NJ410055	SCRAPER RING / /918/ 918	25	0.73%	74.71	1867.75	0.30%	C
54	9HT161081	HALOGEN BULB 12V 60/55W//F2344900/	15	0.44%	121.72	1825.80	0.30%	C
55	9CB610419	COUNTER SUNK SCREW M 12x /35 DIN 7991/60094620/	19	0.56%	94.54	1796.26	0.29%	C
56	9MHN60092	Tension pin FRP 5x32 -fz2/TIE /3000134314/	92	2.69%	19.10	1757.20	0.28%	C
57	9NJ410050	SPRING / /909/ 909	90	2.63%	19.28	1735.20	0.28%	C
58	9HR131435	TERMINAL CAP R.H.//GT455712/	41	1.20%	42.00	1722.00	0.28%	C
59	9HR131438	TERMINAL CAP L.H//GT455779/	41	1.20%	42.00	1722.00	0.28%	C
60	9NJ410052	UPPER WASHER / /912/ 912	26	0.76%	65.07	1691.82	0.27%	C
61	9G1310020	HOSE CLIP 1 1/2" ID//DD100054/	38	1.11%	41.75	1586.50	0.26%	C
62	9FDH10826	PIPE - WATER RETURN /Engine /16241-7337-0 /	13	0.38%	117.60	1528.80	0.25%	C
63	9NJ410040	PISTON WASHER /723 /723/	20	0.58%	72.30	1446.00	0.23%	C
64	9NJ410048	SPRING PLUG / /907/ 907	90	2.63%	14.46	1301.40	0.21%	C

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65	9CL220460	Cheese headscrew M16X40 /Discharge support /042657000/	13	0.38%	99.01	1287.13	0.21%	C
66	9N1U20362	SOC HD CAP SCREW / /FNBL0030 /	20	0.58%	62.50	1250.00	0.20%	C
67	9N1U20269	GALVANIZED C'SNK HD.SCREW/ /FNBL0319 /	19	0.56%	60.99	1158.81	0.19%	C
68	9NJ410056	O-RING / /919/ 919	50	1.46%	21.69	1084.50	0.18%	C
69	9G1310021	HOSE CLIP 2 3/4" ID//DD100056/	38	1.11%	26.77	1017.26	0.16%	C
70	9MT620593	SCREW//M0632925/	25	0.73%	40.56	1014.00	0.16%	C
71	9UC330056	Gauge Adaptor /chiller plant /990000007/	16	0.47%	63.00	1008.00	0.16%	C
72	9NJ410032	VALVE SCREW / /714/ 714	20	0.58%	48.20	964.00	0.16%	C
73	9NJ410036	O-RING/CYLINDER / /719/ 719	50	1.46%	18.08	904.00	0.15%	C
74	9FD231104	TERMINAL COVER//81577079/	20	0.58%	42.00	840.00	0.14%	C
75	9FD231107	TERMINAL COVER//81577082/	20	0.58%	42.00	840.00	0.14%	C
76	9CB610583	RUBBER WASHER M12//80150065/	68	1.99%	12.30	836.40	0.06%	C
77	9HT710002	WHEEL HUB NUTS / /040064/040064	28	0.82%	25.91	725.48	0.06%	C
78	9NJ410039	O-RING / /7212/ 7212	50	1.46%	14.46	723.00	0.12%	C
79	9NJ410058	O-RING / /921/ 921	50	1.46%	14.46	723.00	0.12%	C
80	9FD113072	METER BULB 24V / /NULL112/	56	1.64%	12.26	686.56	0.12%	C
81	9UC330009	COPPER BRAZING ROD /COMPRESSOR /1011 /	19	0.56%	35.60	676.40	0.11%	C
82	9CB610387	GREASE NIPPLE DIN 71412//60091470/	21	0.61%	28.70	602.70	0.11%	C
83	9NJ410030	O-RING / /7122/7122	50	1.46%	12.05	602.50	0.10%	C
84	9HT180006	Shim /FRONT AXLE /F4454010/	50	1.46%	10.50	525.00	0.10%	C
85	9CP310581	SCREW RETAINER SKM 10 DT /320/10129841/	49	1.43%	10.33	506.17	0.08%	C
86	9HV113473	1141 BULB 12V / CODE CHANGE REF.93890014/NULL47/1	30	0.88%	16.03	480.90	0.08%	C
87	9CB610010	HEX. NUT//10001209/	20	0.58%	23.78	475.60	0.08%	C
88	9NJ410068	AIR VALVE / /935/ 935	20	0.58%	21.69	433.80	0.08%	C
89	9NJ410022	SCREW / /703/ 703	50	1.46%	8.44	422.00	0.07%	C
90	9NJ410046	SCREW / /905/ 905	50	1.46%	8.44	422.00	0.07%	C
91	9NJ410060	STO SCREW / /923/923	50	1.46%	8.44	422.00	0.07%	C
92	9Y2130282	*Lug Stowage//6944432/	36	1.05%	10.95	394.20	0.07%	C
93	9NJ410044	CYLINDER NUT / /732/ 732	20	0.58%	18.08	361.60	0.06%	C
94	9CB610034	PLAIN WASHER//10001512/	20	0.58%	16.40	328.00	0.06%	C
95	9CB640230	Dome Nut / /010001274 /	16	0.47%	19.68	314.88	0.06%	C
96	9VJ221181	BULB 12V / /67/ 67	19	0.56%	16.50	313.50	0.06%	C

97	9CB610097	SPRING WASHER//10033552/	20	0.58%	14.76	295.20	0.06%	C
98	9CB610016	HEXAGON NUT DIN 934 M 12 /8 - A2C/10001254/	20	0.58%	13.12	262.40	0.06%	C
99	9HT470394	AXLE PACKING / /25733560530/25733560530	17	0.50%	14.70	249.90	0.06%	C
100	9CB640157	LOCK WASHER S12 / /60083300 /	17	0.50%	13.12	223.04	0.06%	C

ABC Class	Number of Items	Total Amount Required
A	8.79%	60.75%
B	24.28%	20.68%
C	66.93%	18.57%
Total	100 %	100 %

Table 2- ABC Analysis Result

| ABC Class	Number of Items	Total Amount Required
A	306	Rs. 3,75,728.86
B	845	Rs. 1,27,884.95
C	2,329	Rs. 1,14,828.40
Total	3,480	Rs. 6,18,442.21

Fig 2- ABC Analysis Result
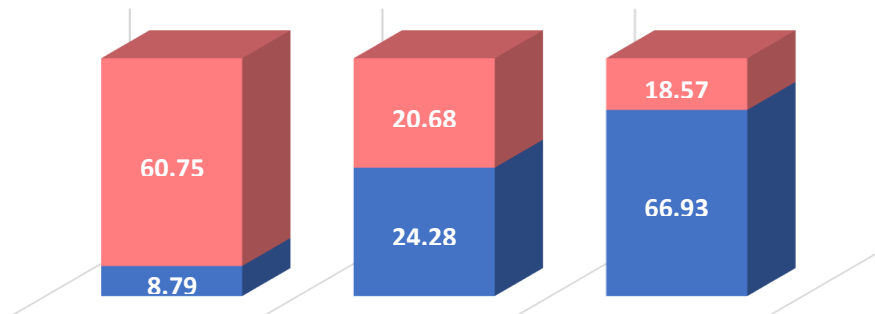
After analyzing table 2, we can see that about 306 items constitute about Rs. 3,75,728 which means about 8.79% of the stock in Project & Machineries of L&T is categorized under the Class A. About 845 items constitute about Rs. 1,27,884.95 which means about 24.28 % of the stock is categorized under the Class B. About 2329 items constitute about Rs. 1,14,828.40 which means about 66.93% items is categorized under the class C.

Fig 3- ABC Analysis Actual vs. Standard
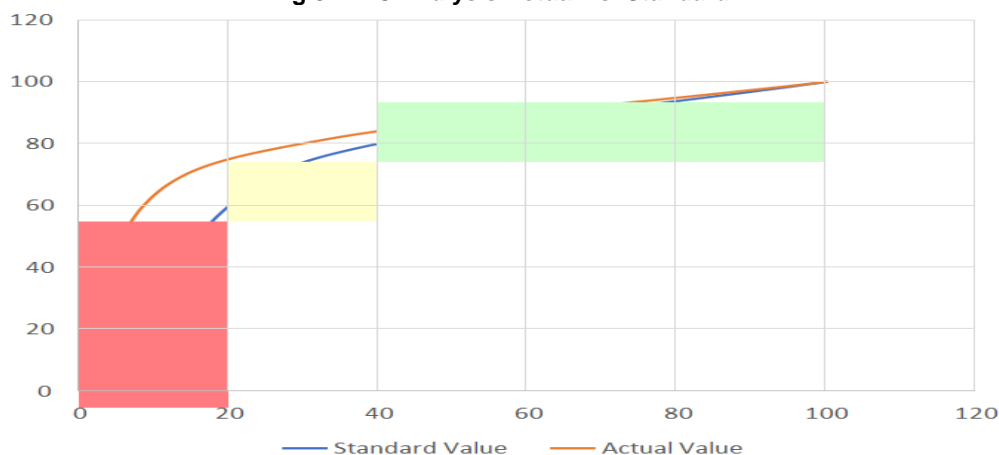
Interpretations

We can observe from the above Fig 3, that there is a slight deviation from the standard class set and the actual results. And this can be particularly seen in Class A. there is about 11% deviation form the actual to standard values. Only 8% of the company's inventory is making up 60% of the total value of inventory, which means there is either a mismanagement of inventory, or very special items having very high cost have been used in the Statue of Unity Project. A-items should have tight inventory control, more secured storage areas and better sales forecasts. Reorders should be frequent,

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with weekly or even daily reorder. Avoiding stock-outs on A-items is a priority.

However, Class B and Class C have minimal deviation, and hence we can say that these items have been properly classified and managed. B-items benefit from an intermediate status between A and C. An important aspect of class B is the monitoring of potential evolution toward class A or, in the contrary, toward the class C. A typically inventory policy for C- items consist of having only 1 unit on hand, and of reordering only when an actual purchase is made. This approach leads to stock-out situation after each purchase which can be an acceptable situation, as the C-items present both low demand and higher risk of excessive inventory costs. For C-items, the question is not so much *how many units do we store?* But rather *do we even keep this item in store?*

Findings

After ABC Analysis of inventory used in Statue of Unity, we can find a deviation or say mismanagement in the Class A level of items of inventory of the project. Lesser amount of usage is costing more amount of total value of the inventory. Such inventory increases the costs of the company. But it must also be noted that such a result was not because of mismanagement of inventory. But other several reason such as-

Meeting the deadline date 31-October-2018

It was very essential to complete the Statue of Unity Project before the inauguration date of 31 October 2018. Hence such extra costs were affordable to Larsen & Toubro. As the concern of SOU project was only on the completion of the statue before the given date. Therefore, Inventory constituted huge costs of Class A category.

Result more than Cost

Larsen & Toubro is a multinational company and it doesn't affect to the company about the cost of the project. Result is more important for the company as to protect its goodwill for completing the project within the stipulated period of time.

Gujarat's Holiday Culture

Gujarat is a state where holidays are celebrated at fullest, and the stores are closed every now and then in the festival seasons. Thus it would become difficult for the store's manager to purchase certain items when there is an urgent requirement in festive seasons. Hence extra amount of inventory is kept under the store, just in case they have an emergency requirement.

No Just-In-Time Principle

Seeing the way in which the company overstocks its inventories, and purchases highest costing machineries, we can find that the company doesn't follow Just-in-Time principle. It is a management technique of inventory where stock is ordered only when the need arises, or else it won't be ordered. It helps in reducing the carrying costs.

Conclusion

Inventory Management is very essential to reduce the costs of the company, and at the same time it ensures that right item be available at the right quantity and in the right time. The inventory constitutes only Raw-Materials and Work-in-progress items, as it is a construction company. After in-depth ABC analysis, we can conclude that the company, particularly in this project haven't followed the inventory management tools properly.

Hence we can say that the inventory management of L&T's Inventory of Project and Machineries department in Statue of Unity project does differ significantly from the standard Inventory Management Techniques."

However this doesn't mean that the company has inefficient management. The SOU project was meant to be done differently. If these type of tools were to be used, the statue completion may have been delayed for a longer time. This is the largest statue in the world, and such increased costs are affordable for the company.

Scope for Further Study

Further study on this can be made in the following areas:

1. A study of every department of L&T, and not only Project & Machineries Department
2. A study of impact of new techniques of Inventory Management used in the construction of Statue in the field of inventory management.
3. A study on other projects undertaken by L&T in India.
4. A study on other projects undertaken by L&T outside India.
5. A study on efficiency of Stores Department of this project.

Suggestions

Though we could find out that there is a lack of efficiency in proper management of the inventory, there are valid reasons for such deviations. Statue of Unity is a project that required national level concern. It is a dream project of PM Narendra Modi. And such increased costsof the inventory was necessary to meet the deadline date 31 October 2018. Hence, it is not appropriate to give any suggestions to a large company like Larsen & Toubro Ltd.

There was in fact a proper management if we look in another way. The statue was completed under 33 months, which is the first 1st government project in India to be completed before the due date. In fact, the project was completed on 10th October itself. This shows that there was an excellent inventory management in L&T. Ex-Deputy General Manager Mr. Jay Prakash Navik, SOU Project, L&T Ltd, in an article published by INDIA TODAY quotes –

"*This was a dream project and a great challenge. Nothing of this size had been built before, so there was no fixed method to it. The methods used*

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changed day by day. That no mishap occurred is proof of our precision."

Considering the above statement, it itself implies that the company deliberately didn't go by the textbook style of Inventory Management, but it used out of box ideas and new ways of management that incurred huge cost, but at the same time fulfilled the promise of completing the project within the due time, which seems to be an impossible task.

Hence there is no suggestions that can be attributed from my side from the study that I have conducted. However, I would still suggest L&T to reduce costs as L&T doesn't follow Just-In-Time principle of inventory management. It would be harmful at the long run to incur heavy costs for the sake of saving reputation and goodwill.

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