



COMPARATIVE ANALYSIS OF PUBLIC AND PRIVATE FOOD GRAIN WAREHOUSING IN VIDARBHA REGION OF MAHARSHTRA

KEYWORDS

Warehouses, Net Present Worth, Internal Rate of Return, Benefit Cost Ratio and Economic Feasibility.

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ABSTRACT

Warehousing plays a very vital role in promoting agriculture marketing, rural banking, financing and ensuring Food Security in the country. It enables the markets to ease the pressure during harvest season and to maintain uninterrupted supply of agricultural commodities during off season. Hence, it solves the problems of glut and scarcity, which are the usual problems in agricultural marketing. With a view, following objectives were undertaken for study i.e.; to study the investment pattern in different types of warehouses, to analyze the profile of commodities stored in the warehouses, to evaluate the economic, technical, and financial feasibility of the warehousing and to identify the constraints and suggest the remedial measures. The primary and secondary source of data was collected so as to elicit the first hand information about the functioning of Maharashtra State Warehousing corporation and Buldhana Urban Warehousing. The data was collected for the period from 2000-01 to 2011-12. In order to study the financial feasibility discounted cash flow technique involving internal rate of returns (IRR), benefit: cost ratio (BCR) and net present worth (NPW) was used. Stochastic Frontier Model was used to calculate economic performance of warehousing. The following conclusions were obtained from the study which were, Investment pattern in Public Warehouses, shows that Fixed Cost comprises (60 per cent) followed by (39.17 per cent) variable cost. Investment pattern in Private Warehouses, shows that Fixed Cost comprises (73.55 per cent) followed by (26.45) per cent variable cost. Economic Viability shows that Public Warehouse has Net Present Worth Rs. 457360.4, followed by B:C Ratio 1.12 and Internal Rate of return 56.7 per cent. Economic Viability shows that Private Warehouse has Net Present worth Rs. 5561085, followed by B: C Ratio 3.02 and Internal Rate of return 43.3 per cent. Public Warehouses have profile of 50.00 per cent Rice, 38.8 per cent Wheat, 3.8 per cent Pulses, 5.4 per cent Oilseeds and 1.8 per cent other commodities stored in it. Private Warehouses have profile of 44.87 per cent Rice, 31.54 per cent Wheat, 8.11 per cent Pulses, 7.34 per cent Oilseeds and 6.34 per cent other commodities stored in it. In Public Warehouses. The mean efficiency in Private warehouses is about 51 per cent which inculcate that 49 per cent of the above inputs were not efficiently utilised in overall. High storage charges, Small quantity, Delay in getting storage space, Price fluctuations and Lack of awareness are major constraints faced by farmers through Public and Private Warehouses. P-P-P models can be used for increasing infrastructure in the era of warehousing. Warehouse receipts and Market information can be a helping hand to the farmers to get desirable returns from fluctuations in prices and awareness ignorance.

2. INTRODUCTION

Globally, the USD 100 billion warehousing industry has undergone significant changes in the last decade owing to the growth in world trade and expansion of international markets as well as increasing application of new technology. Internationally, warehousing industry is classified into three different types viz. Public warehousing, Private warehousing and Contract warehousing. Of these, contract warehousing, which has dedicated customers with long-term agreement, is the fastest growing segment of the industry internationally and is expected to grow at a rate of 12-15 per cent over the next couple of years. The warehousing capacity available in India, in public, cooperative and private sector is about 108.75 million MTs (2015)

The present study has been undertaken, to examine the progress and comparative analysis of the public and private warehouses in Vidarbha region of Maharashtra. The specific objectives of this study are as under:

- 1) To study the investment pattern in different types of warehouses.
- 2) To analyse the profile of commodities stored in the warehouses.
- 3) To study economic feasibility, viability of selected warehouses
- 4) To identify the constraints and suggest the remedial measures.

3. METHODOLOGY

The Vidarbha region of Maharashtra, India is purposively selected for study purpose. The primary source of data has been collected so as to elicit the first hand information about the functioning of private godowns and Maharashtra State Warehousing corporation and also problems encountered by the user group, owners of private godowns and the officials of Maharashtra State Warehousing Corporation. The secondary source of data has been collected to evaluate the investment pattern, profit arising from different commodities stored, to work out the financial feasibility, economic viability, composition of user groups and capacity utilization etc. Simple tabular analysis, IRR, NPW and B:C ratio were calculated to work out the economic feasibility of selected warehouses. Garret ranking technique was used to work out the losses caused in storage of commodities and methods to overcome them.

4. RESULT AND DISCUSSION

4.1 INVESTMENT PATTERN IN WAREHOUSES

It can be observed from the Table 4.1.1 and 4.1.2 that around Rs. 315577 (60.83 per cent) of total cost in MSWC and Rs. 347879.70 (73.55 per cent) of the total cost in private warehouses was involved in the construction of building, purchase of land and other structures. While, the variable cost was around Rs. 125127.20 (39.17 per cent) and Rs. 473006.90 (26.45 per cent) to the total cost, in MSWC and private warehouses, respectively.

It can be observed from the Table 4.1.3 and 4.1.4 that around Rs. 339352.7 (7.01 per cent) of total cost in MSWC and Rs.

363949.30 (4.42 per cent) of the total cost in private warehouses was involved in the inventory. In case of MSWC the investment on machineries was little higher than private warehouses and the cost invested by private warehouse on building and land was much higher than MSWC.

4.2 PROFILE OF COMMODITIES STORED IN SELECTED UNITS

Table 4.2.1 and 4.2.2 indicates the year wise commodity wise break up of utilization of MSWC and private warehouse during the study period 1999-00 to 2012-13. The commodities stored were food grains, Rice, Wheat, pulses, oilseeds and other agricultural produce. In case of MSWC warehouses, it could be seen that the Rice dominated the warehouse space and occupied upto 50 per cent of the total storage space except in few years. In private warehouses the Rice dominated the storage space which was found to more than 34 per cent in all the years except during the last year (2002-03) of study period. The average space occupied by Rice in case MSWC (owned), and private warehouses were (16460.20 M.T.) 50.3, and (6373.78 M.T.) 44.87 per cent, respectively.

After Rice, wheat utilized fairly large warehouse space in all the units of warehouse i.e., MSWC and private warehouses, the pulses and oilseeds also utilized the warehouse space. The average space occupied by wheat in case MSWC and private warehouses were (12716.60 M.T.) 38.80, and (4635.29 M.T.) 31.54 per cent, respectively. The average space occupied by pulses in case MSWC and private warehouses were (1243.90 M.T.) 3.80 and (1255.64 M.T.) 8.11 per cent, respectively. The average space occupied by oilseeds in case MSWC and private warehouses were (1755.50 M.T.) 5.40 and (1015.57 M.T.) 7.34 per cent, respectively.

The average space occupied by other agriculture produce in case MSWC and private warehouses were (576.70 M.T.) 1.8 and (808.21 M.T.) 6.34 per cent, respectively.

The pulses and oilseeds are stored in large quantity by private warehouses to obtain higher profits from commodity trading.

The occupancy of the other agricultural produce in private warehouse is more, because in peak seasons, the MSWC warehouses are fulfilled firstly than the private warehouses, In order to fulfill the capacity; private warehouses store other agricultural produce in it.

4.3 FINANCIAL FEASIBILITY AND ECONOMIC VIABILITY OF SELECTED MSWC WAREHOUSE AND PRIVATE WAREHOUSES

To evaluate the feasibility of investment in the warehouse business, project evaluation criteria such as net present value (NPV), benefit: cost ratio and internal rate of returns were worked out.

It was evident from the Table 4.3.1 and 4.3.2 that all the selected warehousing units were able to earn normal profits. Therefore, for assessing the economic viability of warehousing units, an annual profitability of the warehouses was calculated.

It could be seen that the profit earned by private warehousing units was highest and the average was Rs. 1353348, followed by MSWC which was found to be Rs. 630967.30

It was observed that the Table 4.3.3 and 4.3.4 that net present value of MSWC was Rs. 55378.7 and that of private warehouse was Rs. 175474.7, respectively at 12 per cent rate of interest. The internal rate of return was 56.7 per cent in MSWC and 43.3 per cent in private warehouses.

4.4 PROBLEMS/CONSTRAINTS FACED BY THE USER GROUPS AND WAREHOUSE OPERATORS IN FUNCTIONING OF WAREHOUSES

The Garret ranking technique reveals that, High storage charge, constraint face by the farmer ranks first having score (8064.00), Small quantity ranks second (7300.00) followed by other constraints as Delay in getting storage space (6732.00), Price fluctuations (5760.00), Lack of awareness (5488.00), Lack of transportation facility (5148.00), No proper guide lines (4800.00), Inadequate storage space (4444.00), Location is faraway (4017.00), Risk of damage (3332.00), Immediate need of cash (2781.00) respectively in MSWC Warehouses.

The Garret ranking technique reveals that, High storage charge, constraint face by the farmer ranks first having score (10080.00), Small quantity ranks second (8760.00) followed by other constraints as, Price fluctuations (7200.00), Delay in getting storage space (6732.00), Lack of awareness (6720.00), Location is faraway (6240.00), No proper guide lines (5760.00), Inadequate storage space (5280.00), Immediate need of cash (4680.00) Risk of damage (4080.00), Lack of transportation facility (3240.00) respectively in Private Warehouses.

Table 4.2.1: Profile of commodities stored in the selected warehouses of MSWC during 1999-2013

(QTY. M.T.)

Year	Rice	Per cent	Wheat	Per cent	Pulses	Per cent	Oilseeds	Per cent	Others	Per cent
1999-00	15207.1	47.8	13140.2	41.3	1237.8	3.9	1678.1	5.3	564.6	1.8
2000-01	15740.3	52.7	10598.4	35.5	1256.5	4.2	1693.2	5.7	563.8	1.9
2001-02	16683.0	50.0	13157.6	39.4	1242.6	3.7	1738.7	5.2	564.4	1.7
2002-03	15555.1	49.7	12259.2	39.2	1239.1	4.0	1670.8	5.3	565.3	1.8
2003-04	15555.1	49.7	12259.2	39.2	1239.1	4.0	1670.8	5.3	565.3	1.8
2004-05	16761.7	50.1	13152.1	39.3	1239.6	3.7	1688.7	5.1	595.8	1.8
2005-06	18970.2	52.9	13185.5	36.8	1246.8	3.5	1851.6	5.2	578.6	1.6
2006-07	16910.7	50.2	13149.8	39.0	1253.9	3.7	1749.8	5.2	610.8	1.8
2007-08	16616.6	49.2	13152.1	39.0	1243.7	3.7	2136.7	6.3	593.9	1.8
2008-09	16616.6	50.0	13152.1	39.6	1239.1	3.7	1668.4	5.0	563.9	1.7
2009-10	16444.4	50.3	12672.7	38.7	1244.3	3.8	1764.3	5.4	578.0	1.8
2010-11	1582.0	8.8	12720.6	71.2	1243.8	7.0	1754.7	9.8	576.6	3.2
2011-12	1450.0	7.4	1300.4	6.7	1400.0	7.2	14800.0	75.7	588.0	3.0
2012-13	1520.0	8.5	12716.6	71.3	1320.0	7.4	1755.5	9.8	521.0	2.9
Average	16460.2	50.3	12716.6	38.8	1243.9	3.8	1755.5	5.4	576.7	1.8

Table 4.2.2: Profile of commodities stored in selected private warehouses during 1999-2013

(QTY. M.T.)

Year	Rice	Per cent	Wheat	Per cent	Pulses	Per cent	Oilseeds	Per cent	Others	Per cent
1999-00	4020	57.13	1132	16.09	960	13.64218	345	4.90	580	8.24
2000-01	4952	39.95	5000	40.33	1200	7.743809	745	6.01	500	4.03
2001-02	6890	42.09	5860	35.80	1800	5.864386	860	5.25	960	5.86
2002-03	520	11.12	2180	46.62	1006	20.53037	550	11.76	420	8.98
2003-04	2800	34.80	2860	35.55	996	11.93139	500	6.21	890	11.06

2004-05	5425	47.19	2800	24.36	1600	8.351457	860	7.48	810	7.05
2005-06	5312	52.02	1960	19.19	600	9.400705	1220	11.95	1120	10.97
2006-07	8992	56.22	2500	15.63	1860	6.002251	1500	9.38	1142	7.14
2007-08	9422	47.21	5800	29.06	1340	4.80986	2197	11.01	1200	6.01
2008-09	8432	46.31	7220	39.65	1120	5.272408	616	3.38	820	4.50
2009-10	9680	44.16	8432	38.46	1640	4.379162	960	4.38	1210	5.52
2010-11	8436	52.85	4200	26.31	1232	6.013907	1245	7.80	850	5.32
2011-12	9430	45.22	8450	40.52	1225	4.603213	1200	5.75	550	2.64
2012-13	9920	51.93	6500	34.03	1000	5.025389	1420	7.43	263	1.38
Average	6730.786	44.87	4635.29	31.54	1255.64	8.11	1015.571	7.34	808.21	6.34

Table No. 4.3.1 Economic Viability in Public Warehouses

42(b)

	RETURNS	COSTS	D.R.@12%	Returns* D.R.	Cost* D.R.	NPW	B:C
2001	727858.2	945198.3	0.892857	649873.4	843927.1	-194054	0.77
2002	739759.3	648985.1	0.797194	589731.6	517367	72364.67	1.14
2003	742590.4	587687.2	0.71178	528561.2	418304.2	110257	1.26
2004	760393.9	616261.7	0.635518	483244.1	391645.5	91598.61	1.23
2005	740699.4	495523.4	0.567427	420292.7	281173.3	139119.5	1.49
2006	761215.9	600051.1	0.506631	385655.7	304004.5	81651.14	1.27
2007	743830.3	550485.1	0.452349	336471.1	249011.5	87459.57	1.35
2008	449566.4	625820.9	0.403883	181572.3	252758.5	-71186.2	0.72
2009	473074	352870.2	0.36061	170595.2	127248.5	43346.68	1.34
2010	336513.1	344599.6	0.321973	108348.2	110951.8	-2603.63	0.98
2011	398637.4	380961.9	0.287476	114598.7	109517.4	5081.283	1.05
2012	697468.7	329978.7	0.256675	179022.8	84697.32	94325.52	2.11
	630967.3	539868.6	0.516198	345663.9	307550.6	457360.4	1.12

Table No. 4.3.2 Economic Viability in Private Warehouses

43(b)

	RETURNS	COSTS	D.R.@12%	RETURNS* D.R.	COSTS* D.R.	NPW	B:C
2001	1306034	357992.3	0.892857	1166101	319636	846465.4	3.65
2002	1329982	398346.2	0.797194	1060254	317559.1	742694.4	3.34
2003	1368750	435084.6	0.71178	974249.5	309684.6	664564.9	3.15
2004	1407809	450930.8	0.635518	894687.8	286574.7	608113.1	3.12
2005	1242307	529207.7	0.567427	704918.6	300286.7	404632	2.35
2006	1503531	447223.1	0.506631	761735.8	226577.1	535158.7	3.36
2007	1279335	452638.5	0.452349	578706	204750.7	373955.4	2.83
2008	1282245	422715.4	0.403883	517877.2	170727.7	347149.5	3.03
2009	1233335	635976.9	0.36061	444752.8	229339.7	215413.2	1.94
2010	1365159	609592.3	0.321973	439544.8	196272.4	243272.3	2.24
2011	1387071	545038.5	0.287476	398749.8	156685.5	242064.3	2.54
2012	1534619	219330.8	0.256675	393898.4	56296.75	337601.6	7.00
	1353348	458673.1	0.516198	694623	231199.2	5561085	3.02

Table No. 4.3.3 Economic Viability in Public Warehouses (IRR)

43(c)

	RETURNS	COSTS	NET INCOME	D.R.@40%	D.R.@43%	L.D.R	H.D.R
1	727858.2	945198.3	-217340	0.714286	0.699301	-155243	-151986
2	739759.3	648985.1	90774.24	0.510204	0.489021	46313.39	44390.55
3	742590.4	587687.2	154903.2	0.364431	0.341973	56451.59	52972.71
4	760393.9	616261.7	144132.2	0.260308	0.239142	37518.79	34468.06
5	740699.4	495523.4	245176	0.185934	0.167232	45586.66	41001.31
6	761215.9	600051.1	161164.9	0.13281	0.116946	21404.36	18847.52
7	743830.3	550485.1	193345.2	0.094865	0.08178	18341.6	15811.8
8	449566.4	625820.9	-176254	0.06776	0.057189	-11943.1	-10079.8
9	473074	352870.2	120203.8	0.0484	0.039992	5817.893	4807.217
10	336513.1	344599.6	-8086.47	0.034572	0.027967	-279.562	-226.151
11	398637.4	380961.9	17675.5	0.024694	0.019557	436.4789	345.6808
12	697468.7	329978.7	367490	0.017639	0.013676	6482.001	5025.891
	630967.3	539868.6	91098.71	0.204659	0.191148	70887.2	55378.7
							IRR= 56.7

Table No. 4.3.4 Economic Viability in Private Warehouses (IRR)

43(d)

	RETURNS	COSTS	NET INCOME	D.R.@40%	D.R.@43%	L.D.R	H.D.R
1	1306034	357992.3	948041.2	0.714286	0.699301	677172.3	662965.9
2	1329982	398346.2	931635.9	0.510204	0.489021	475324.4	455589.9
3	1368750	435084.6	933665.8	0.364431	0.341973	340257.2	319288.5
4	1407809	450930.8	956877.8	0.260308	0.239142	249083.1	228829.7
5	1242307	529207.7	713099.8	0.185934	0.167232	132589.8	119253.2

6	1503531	447223.1	1056308	0.13281	0.116946	140288.6	123530.6
7	1279335	452638.5	826696.2	0.094865	0.08178	78424.12	67607.31
8	1282245	422715.4	859529.5	0.06776	0.057189	58242.03	49155.54
9	1233335	635976.9	597357.7	0.0484	0.039992	28912.27	23889.67
10	1365159	609592.3	755567	0.034572	0.027967	26121.17	21130.64
11	1387071	545038.5	842032.8	0.024694	0.019557	20793.16	16467.69
12	1534619	219330.8	1315288	0.017639	0.013676	23199.81	17988.23
	1353348	458673.1	894675	0.204659	0.191148	2250408	175474.7
							IRR=43.5

(L.D.R, H.D.R - Lower Discount rate and Higher Discount rate respectively)

Table 4.4.1.1 Problems faced by the farmers through Public (MSWC) Warehouses

Table Problems faced by the farmers through Private Warehouses

75(a)

sr. no.	PRIVATE Factors	1	2	3	4	5	6	7	8	9	10	11	12	total no. of respondents	garret table value	total score	Mean score	rank
1	High storage charge	24	2	18	9	19	8	6	6	12	6	9	1	120	84	10080.00	840	1
2	Small quantity	20	19	18	6	5	7	8	9	8	10	8	2	120	73	8760.00	730	2
3	Delay in getting storage space	18	20	19	8	12	7	12	8	4	2	8	2	120	66	7920.00	660	3
4	Price fluctuations	24	2	14	9	8	16	4	7	14	11	9	2	120	60	7200.00	600	4
5	Lack of awareness	22	14	19	9	9	8	6	9	12	2	8	2	120	56	6720.00	560	5
6	Lack of transportation facility	21	14	19	8	8	9	13	6	12	1	8	1	120	52	6240.00	520	6
7	No proper guide lines	20	15	14	14	11	8	7	8	10	6	6	1	120	48	5760.00	480	7
8	Inadequate storage space	19	14	14	9	11	9	8	5	12	9	8	2	120	44	5280.00	440	8
9	Location is faraway	17	15	18	10	8	8	8	8	11	9	6	2	120	39	4680.00	390	9
10	Risk of damage	22	15	14	11	14	10	5	6	12	1	8	2	120	34	4080.00	340	10
11	Immediate need of cash	21	19	15	9	10	9	9	6	12	1	8	1	120	27	3240.00	270	11
12	Any others	21	14	12	11	10	13	11	6	12	1	8	1	120	0	0.00	0	12

Table Problems faced by the farmers through Public (MSWC) Warehouses

74(a)

sr. no.	Factors PUBLIC	1	2	3	4	5	6	7	8	9	10	11	12	total no. of respondents	garret table value	total score	Mean score	rank
1	High storage charge	24	20	19	8	6	7	12	8	4	2	8	2	120	84	8064.00	672.00	1
2	Small quantity	20	2	14	9	12	16	4	7	14	11	9	2	120	73	7300.00	608.33	2
3	Delay in getting storage space	18	2	18	9	19	8	6	10	12	6	12	0	120	66	6732.00	561.00	3
4	Price fluctuations	24	19	18	6	5	7	8	9	8	6	8	2	120	60	5760.00	480.00	4
5	Lack of awareness	22	14	19	9	9	8	6	9	12	2	8	2	120	56	5488.00	457.33	5
6	Lack of transportation facility	21	14	19	8	8	9	13	6	12	1	8	1	120	52	5148.00	429.00	6
7	No proper guide lines	20	15	14	14	11	8	7	8	10	6	6	1	120	48	4800.00	400.00	7
8	Inadequate storage space	19	14	14	9	11	9	8	5	12	9	8	2	120	44	4444.00	370.33	8
9	Location is faraway	17	19	15	9	14	9	9	6	12	1	8	1	120	39	4017.00	334.75	9
10	Risk of damage	22	14	12	11	10	13	11	6	12	1	8	0	120	34	3332.00	277.66	10
11	Immediate need of cash	21	15	18	10	8	8	8	8	11	9	6	2	124	27	2781.00	231.75	11
12	Any others	21	15	14	11	14	10	5	6	12	2	8	2	120	0	0.00	0	12

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