The Impact of Cost on the Profitability of Textile Companies in Tamil Nadu

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***Abstract*—Indian textile industry is one of the largest industries in India in terms of employment generation, earning foreign exchange and plays a substantial role in the economy. Especially Tamil Nadu leads the industry with 40% of the nation's cotton yarn production. Textile industry boosts Indian economy but with lot of challenges, like high production costs, in-friendly labour law, logistic disadvantages, rising transaction cost, declining in mill sector, competition due to globalization etc., The financial performance of the most of textile companies are harshly affected when the costs are not managed properly. Some of the companies adopt cost leadership strategies to sustain in the market amidst multiple challenges. Over the last two decades, the industry has shifted from sellers' market to the buyers' market. Therefore, there is a dire need for proper Cost Management in the units. The financial performance of the textile industry depends upon the cost control and its efficiency. Hence this study aims to know the cost behaviour and its effect on the profitability of the industry.**

***Index Terms*—cost, cost-efficiency, financial performance, profitability, textile companies, Tamil Nadu, variability.**

I. INTRODUCTION

Today it is observed that the importance of cost management systems is continuously growing in a dramatic business environment. Due to growing competition in globalized markets, companies need more accurate information about the cost, profitability of their products, customers or markets. All these problems carry a greater need for understanding the costs of different activities and other areas where the costs play the important role. This change in the business environment is also associated with the suitable change of structure, organizational changes in the company and structure of products.

If a company wants to keep pace with its strongest competitors, its cost system must have the ability to react to changes in product, activity, structure and feature of products. If the cost system is not efficient and conforms to process, activities and product structure dynamics, then the cost system will become outdated and will generate incorrect information about costs of a product.

In this article, the impact of cost on the profitability has been explicitly studied by analyzing the cost behaviour and financial performance of textile companies located in Tamil Nadu.

II. REVIEW OF LITERATURE

Manoj Anand, B.S. Sahay & Subhashish Saha (2003) made a research study on cost management practices in India among 53 companies in different sectors including engineering, chemicals, textiles, telecom etc., Market leaders in each industry adopt cost reduction as a strategic imperative. Nearly 49% of the samples used an Activity-based Costing (ABC) system for their pricing and operational decisions. The rest of the companies followed the conventional cost practices for their pricing, inventory valuation, outsourcing and value chain analysis. The companies which practiced ABC system were very successful in value chain and supply chain analysis. The firms which followed the traditional cost methodology were good at managing budget controls**.** The study gave a conclusion that there is no significant difference in the application of standard costing between traditional and ABC system users.

Hamdallah Madher E, Osama S. Shaban & Srouji Anan F (2014) aimed to explore the usage of cost accounting system in textiles, leather and clothing

companies in Jordan. The researchers tried to identify the effect on the pricing process in textile, leather and clothing products by implementing an effective costing system. The study also suggested that modern techniques like Activity Based Costing (ABC) and target costing should be adopted, which will result in a highly effective and good quality costing system. Also, the small companies should employ qualified cost accountants or train the staff to make use of the system.

Mohammad Mazibar Rahman & Saiful Islam (2014) both researchers attempted a study on relevant costing in Readymade garment industry of Bangladesh. Relevant costing is used for making short-term decisions and the study aimed at assessing four levels of perceptions: i) making or buying ii) dropping or retaining a segment iii) resource constraint and iv) accepting special orders. With the help of two-way ANOVA analysis, it was concluded that there is significant relationship between relevant costing and decision making in RMG textile businesses operating in Bangladesh. Luiz Santangelo Reis, Kevin Joseph Good, Altair Borgert & Fernando Richartz (2016) in their research explained the factors that affect cost behaviour in textile industry. This study seeks the degree of petroleum, exchange and cotton price fluctuations affects the cost behaviour in textile companies listed in Sao Paulo stock exchange during the years 1995-2014. A sample of 13 companies was selected for this research and the parameters analysed were Net sales revenue, Cost of Goods sold, Administrative and selling costs which were adjusted to consumer price index. In response to the research question, the study concluded that variation in petroleum, currency exchange prices and cotton prices is having little impact on the relationship between production costs and net revenue in Brazilian companies.

Sani Alfred Ilemona (2019) examined the impact of target costing on success of textile manufacturing enterprises in Nigeria. As a managerial technique whether the target costing drives the success of manufacturing companies in terms of cost reduction and profitability was the objective of the study. The finding of the study was, implementation of target costing in textile manufacturing companies triggered profitability. The technique also assisted the manufacturers with producing competitive products of high quality which ensured high customer satisfaction. The study recommended that the Nigerian companies should implement target costing technique to succeed in the business.

Emmanuel K. Tanui (2023) presented a study on cost leadership strategy and its effect on performance of manufacturing companies in Kenya. 73% of the Kenyan manufacturing companies are made up of food, clothing and textile sectors. The results showed that there is a positive significant relationship between cost leadership and sustainability of manufacturing companies. But the result was negative for the impact of innovation on sustainability. The study recommended that the cost drivers should be effectively used in the value chain to increase their applications in economies of scale.

III. STATEMENT OF THE PROBLEM

The rising cost of doing textile business in the country has been of utmost concern to the industry and to the entire stakeholders. This results in instability in trade, loss of market share to neighboring countries and even closure of businesses apart from the financial losses. Textile companies without a proper cost management system are struggling to reduce the cost and don't have proper management tools to measure the cost and profitability relationship. Majority of the research studies measure the financial performance of the textile companies only by analyzing the profitability, liquidity and turnover ratios. The consideration of expenses or cost efficiency ratios are very minimal in measuring the performance of textile companies. Since the textile industry depends upon the agriculture sector for its raw material and the output of agriculture industry is based on seasonal factors, monsoon conditions and availability of natural water resources. Further the textile industry is labour and power intensive industry, the cost of these elements is fluctuating very rapidly and has major portion in the production cost. Therefore, nevertheless there are fluctuations in the raw material cost and other production costs, it is important to earn profit to sustain in the business by taking appropriate measures to control the cost to at least maintain the profit and achieve financial performance.

Based on the above background, the following questions are to be answered to know the inter-relationship between cost and profitability and the impact of the cost on the profitability of the textile industry.

i) What is the business growth of the textile industry in terms of sales in Tamil Nadu?
ii) What are the costs incurred in textile manufacturing for Tamil Nadu companies?
iii) What is the profitability of the textile mills operating in Tamil Nadu?
iv) What is the inter-relationship between cost and profitability?

IV. OBJECTIVES OF THE STUDY

- To study the behaviour and trend of the sales of textile manufacturing companies operating in Tamil Nadu.
- To study the nature of expenses (cost) incurred by the textile manufacturing companies operating in Tamil Nadu.
- To measure the profitability of textile manufacturing companies operating in Tamil Nadu.
- To assess the interrelationship among cost, sales and profitability of the textile manufacturing companies operating in Tamil Nadu.

V. HYPOTHESES

H_{01} – The textile industry is growing significantly in Tamil Nadu in terms of sales.
H_{02} – The cost is not changing significantly compared to sales.
H_{03} – There is no significant change in the profit.
H_{04} – There is no association between cost and profitability.

VI. SIGNIFICANCE OF THE STUDY

This study tries to analyse the financial performance and cost structure of the textile companies operating in Tamil Nadu. This report not only gives a view of the profitability and financial performance of the companies but also proposes suggestions for improvement in managing costs and maintaining cost competitiveness.

VII. SCOPE OF THE STUDY

This study relates to the problem of computing financial performance of selected textiles companies in Tamil Nadu. The financial performance of the selected textile companies has been assessed by calculating various profitability ratios, liquidity ratios and cost efficiency ratios and by studying the inter-relationship between cost and profitability. The study covers the leading textile companies with spinning segments as their major operations. The scope of the current study is to highlight the performance of the selected textile companies through assistance of a few statistical tools and financial techniques.

VIII. LIMITATIONS OF THE STUDY

The research study has the following limitations:

- The samples selected for this study are only major ten textile companies in Tamil Nadu and this sample size may not represent the true population of whole country.
- The period taken for this study is from 2011 to 2023 and any changes happened prior or later to this period are not considered.
- The ratios and expenses considered for this research are only on the given groupings or heads and arriving at any further level of detailed information may impact the results.
- The current study mainly focuses on the financial performance of the textile companies ignoring other dimensions of performance.

IX. RESEARCH METHODOLOGY

Methodology followed in this research is given by sampling process, period of the study, data sources and tools of analysis.

1. Sampling:
There are 123 textile companies registered in Tamil Nadu and only 16 companies are registered with Bombay Stock exchange (BSE). Out of the 16 companies, ten companies with continuous operations from the year 2011 were chosen for this study.
The list of textile companies chosen for this research study are:
i) Amarjothi spinning mills

ii) Ambika cotton mills
iii) Bannari amman spinning mills
iv) Kandagiri spinning mills
v) KPR mill
vi) Rajapalayam mills
vii) Sri Ramakrishna mills
viii) Sambandam spinning mills
ix) Sri Lakshmi Saraswathi textiles
x) Super spinning mills

2. Period of the study:
This study has been carried over for a period of 13 years, from the financial year 2011 to 2023. The study has been conducted on the textile companies listed on the Indian stock exchanges, which publishes its annual reports continuously.

3. Source of data:
As this study needs highly reliable and authenticated data for analysis, the availability of data to the public and the accessibility to financial statements are limited for the researchers. Listed companies in stock exchange provide potential scope for research as the annual reports are published to the public investors and various stakeholders. Hence, this research was based on the secondary data available in the form of profit and loss statement, balance sheet and cash flow statement from the 10 listed textile companies of Bombay stock exchange.
4. Tools of Analysis:
The analysis of financial performance of an organization is done with ratio analysis such as profitability ratios, liquidity ratios and cost-efficiency ratios.

Ratio analysis is a technique where ratios are used as a yardstick for evaluating the financial condition and performance of the firm. The term ratio refers to the relationship between two variables and this can be expressed as a fraction, percentage or proportion. Profitability ratios, liquidity ratios and cost-efficiency ratios are the three important categories of ratios which are used for this research.

i) Profitability ratio is a financial metric that assesses a company's ability to earn a profit relative to its assets, equity and sales. Normally, metrics that are used to measure profitability such as Profit After Tax (PAT), Earnings Before Tax (EBT), Earnings Before Interest and Tax (EBIT), Earnings Before Interest, Tax, Depreciation and Amortisation (EBITDA), operating profit and other measures such as Earnings Per Share (EPS) and Return on Capital Employed (ROCE) are used in this analysis.
ii) Liquidity ratios are measurements used to examine the ability of an organization to pay off its short-term obligations. Working capital ratio, Debt-Equity ratio and total assets turnover ratio are some of the liquidity ratios that are applied in this analysis.
iii) Cost efficiency refers to maximizing the output while minimizing input costs, basically extracting the most value from available resources. Major costs involved in textile goods manufacturing such as raw material cost, power and fuel cost, employee cost, other manufacturing expenses, overheads, finance cost and depreciation are compared on operational sales and given as ratios for this research analysis.

Apart from the financial tools used for studying financial performance, summary statistics are applied to understand the nature of the data and some below mentioned statistical tools have been applied to study the inter-relationship between cost and profitability.

i) Arithmetic Mean:
Mean which is also known as arithmetic average, is the most common measure of central tendency and is defined as the value which we get by dividing the total of the values of various given items in a series by the count of all numbers in the series. It is a widely used statistical tool in the fields such as management, commerce, economics, social studies and almost in every study of academics.
Mean is given by,

$$\text{Mean } (\bar{x}) = \frac{x_1+x_2+x_3.....+x_n}{n}$$

where, x_1, x_2 are the items and n are the number of items in the series.

ii) Standard Deviation:
Standard deviation is most widely used measure of dispersion of a series and is generally denoted by σ (sigma). Standard deviation is defined as the square root of the average of squares of deviations, when such deviations for the values of individual items in a series

are obtained from the arithmetic average. Standard deviation is calculated by,

$$(\sigma) = \sqrt{\frac{\Sigma(X_i - \bar{X})^2}{n}}$$

iii) Coefficient of Variation (CV):

Coefficient of Variation is used mostly in research studies and is regarded as a very satisfactory measure of dispersion in a series. It is calculated as the standard deviation divided by the mean, often expressed as a percentage. It is popularly used in the estimation and testing of hypotheses.

CV = [σ / x̄] * 100

Where σ = standard deviation and x̄ = mean of series

iv) Compounded annual growth rate (CAGR):

Compounded annual growth rate is the year-over-year growth rate of an investment over a specified period. It is a widely used statistical tool especially in growth industries. CAGR also helps in analysing and communicating the behaviour over a series of years on different business metrics such as costs, sales, production, market share and other various measures. CAGR is calculated by taking the nth root of the total percentage growth rate where n is the number of years in the period being considered.

$$CAGR = \left(\left(\frac{EV}{BV}\right)^{\frac{1}{n}} - 1\right) \times 100$$

where, EV = Ending value, BV = Beginning value and n = number of years

v) Regression Analysis:

Regression analysis is a set of statistical processes for estimating the relationship between a dependent variable and one or more independent variables. This analysis helps in understanding how changes in independent variables affect the dependent variable. As more than two independent variables are used in this study, multiple linear regression models are to be applied in this study.

The multiple linear regression model is mathematically expressed as.

$Y = a + bX_1 + cX_2 + dX_3 + €$

Where, Y = Dependent variable

X_1, X_2, X_3 = Independent variables

a = Intercept

b, c, d = Slopes

€ = Residual (error)

X. RESULT AND DISCUSSION

The relationship between sales, cost of sales and operating profit of the ten textile companies from the year ending 2011 to 2023 is analysed and the result is given in this section. The trend of sales of textile manufacturing companies is given in the following table.

Table 1: Showing the Sales performance from 2011 to 2023 (Rs in lakhs)

Year/ Company	Amarjothi spinning mills	Ambika cotton mills	Bannari Amman Spinning mills	Kandagiri spinning mills	KPR mill	Rajapalayam mills	Sri Ramakrishna mills	Sambandam spinning mills	Sri Lakshmi Saraswathi textiles	Super spinning mills	TOTAL
2010-11	12399	31852	54549	15177	105681	32601	6967	20713	10187	47776	337902
2011-12	13242	38944	45973	12638	119815	32723	4209	18679	9768	37795	333786
2012-13	15997	39776	55972	16054	149302	34466	3782	21749	11467	43415	391978
2013-14	19811	47686	69965	19361	195975	43389	1731	25596	12570	52120	488203
2014-15	20148	49554	68042	18936	208048	38865	1626	24233	11508	44050	485008
2015-16	19414	49231	77100	14473	196127	39465	1862	20542	10890	34829	463932
2016-17	21682	52861	86845	7803	221914	40709	1088	20911	9567	29418	492798
2017-18	18945	58447	89204	5438	251152	42604	1333	19308	10549	26088	523068
2018-19	21220	65601	99983	6955	297853	41262	2707	20950	11165	20812	588507
2019-20	18253	62309	92497	2657	289807	35782	3140	19118	9254	14561	547377
2020-21	16731	63336	85964	254	295364	41184	2104	23107	8601	4888	541534
2021-22	25029	92052	128543	319	407367	68965	4406	35494	15014	9345	786533
2022-23	20946	84750	109514	123	473955	86189	3951	26325	15104	8556	829413
X	18755	56646	81858	9245	247105	44477	2993	22825	11203	28743	523849
StD	3477	17360	23346	7220	106861	15522	1654	4507	2013	16077	147999
CV	18.5	30.6	28.5	78.1	43.2	34.9	55.3	19.7	18.0	55.9	28.3
CAGR	4.1	7.8	5.5	-31.0	12.2	7.8	-4.3	1.9	3.1	-12.4	7.2

According to the data given in the above table the textile industry has registered a growth rate of 7.2 from the financial year 2010-11 to 2022-23. KPR mill consistently has a healthy track from sales perspective with a compounded annual growth rate (CAGR) of 12.2. Three out of ten companies showed negative growth in 12 years. The rest 6 companies show an average performance with CAGR ranging from 1.9 to 7.8.

While KPR mill is growing aggressively Ambika cotton mills and Rajapalayam mills grow steadily. Kandagiri spinning mills is under declining stage with drastic losses. Super spinning mills and Sri Ramakrishna mills need a turnaround strategy to improve the sales levels. Companies with good stability are Sri Lakshmi Saraswathi textiles and Amarjothi spinning mills whose co-efficient of variance are around 18 to 18.5%. Stability of Kandagiri spinning mills is very poor as CV touches 78.1% followed by Super spinning mills (55.9%) and Sri Ramakrishna mills (55.3%).

The cost trend for the same corresponding year ending 2011 to 2023 is given in the following table.

Table 2: Showing the Cost of Sales from 2011 to 2023 (Rs in lakhs)

Year/ Company	Amarjothi spinning mills	Ambika cotton mills	Bannari Amman Spinning mills	Kandagiri spinning mills	KPR mill	Rajapalayam mills	Sri Ramakrishna mills	Sambandam spinning mills	Sri Lakshmi Saraswathi textiles	Super spinning mills	TOTAL
2010-11	11203	26743	47782	13791	96692	29808	6876	18826	9578	46896	308195
2011-12	12942	35798	49594	14674	117179	35243	5478	20887	10810	45430	348035
2012-13	16179	35740	52008	15250	135806	32449	4317	20420	10609	43383	366162
2013-14	17337	41743	65466	18766	180983	39946	2344	24240	12265	52141	455230
2014-15	18562	43207	66372	18753	191431	38633	2483	23811	11573	46163	460988
2015-16	18732	43513	74412	15634	177352	38412	2512	20467	11372	37479	439884
2016-17	20011	45738	85635	10467	193595	37431	1853	19672	10018	31744	456163
2017-18	18085	50608	89020	7120	221703	41818	2086	18847	11169	28521	488976
2018-19	19944	57017	98956	8676	260315	41448	2014	20547	11918	23143	543978
2019-20	17021	55472	94321	4325	255786	38274	2061	18946	10392	16838	513437
2020-21	15842	54331	87785	500	240678	46468	1980	22098	8745	5685	484112
2021-22	23157	68149	121360	535	317881	65447	4138	33388	14590	9117	657761
2022-23	19465	70887	114935	309	404492	84146	3948	28255	17152	9894	753482
X	17575	48380	80588	9908	214915	43809	3238	22339	11553	30495	482800
StD	3112	12749	23873	6862	83834	14867	1590	4268	2205	16238	120638
CV	17.7	26.4	29.6	69.3	39.0	33.9	49.1	19.1	19.1	53.2	25.0
CAGR	4.3	7.8	7.0	-25.3	11.6	8.3	-4.2	3.2	4.6	-11.3	7.1

From the data table, total cost of sales for the period 2010-11 to 2022-23 also moves in the same trend as per the sales pattern. This shows that the companies are managing to increase the selling price based on the costs involved in production and post-production activities.

The cost of sales is also given as percentage on sales in the table below.

Table 3: Showing the Cost of Sales from 2011 to 2023 (as % on sales)

Year/ Company	Amarjothi spinning mills	Ambika cotton mills	Bannari Amman Spinning mills	Kandagiri spinning mills	KPR mill	Rajapalayam mills	Sri Ramakrishna mills	Sambandam spinning mills	Sri Lakshmi Saraswathi textiles	Super spinning mills	TOTAL
2010-11	90.4	84.0	87.6	90.9	91.5	91.4	98.7	90.9	94.0	98.2	91.2
2011-12	97.7	91.9	107.9	116.1	97.8	107.7	130.1	111.8	110.7	120.2	104.3
2012-13	101.1	89.9	92.9	95.0	91.0	94.1	114.1	93.9	92.5	99.9	93.4
2013-14	87.5	87.5	93.6	96.9	92.4	92.1	135.4	94.7	97.6	100.0	93.2
2014-15	92.1	87.2	97.5	99.0	92.0	99.4	152.8	98.3	100.6	104.8	95.0
2015-16	96.5	88.4	96.5	108.0	90.4	97.3	134.9	99.6	104.4	107.6	94.8
2016-17	92.3	86.5	98.6	134.1	87.2	91.9	170.2	94.1	104.7	107.9	92.6
2017-18	95.5	86.6	99.8	130.9	88.3	98.2	156.5	97.6	105.9	109.3	93.5
2018-19	94.0	86.9	99.0	124.8	87.4	100.5	74.4	98.1	106.7	111.2	92.4
2019-20	93.3	89.0	102.0	162.8	88.3	107.0	65.7	99.1	112.3	115.6	93.8
2020-21	94.7	85.8	102.1	196.9	81.5	112.8	94.1	95.6	101.7	116.3	89.4
2021-22	92.5	74.0	94.4	167.9	78.0	94.9	93.9	94.1	97.2	97.6	83.6
2022-23	92.9	83.6	105.0	251.2	85.3	97.6	99.9	107.3	113.6	115.6	90.8
X	93.9	86.3	98.2	136.5	88.5	98.8	117.0	98.1	103.2	108.0	92.9
StD	3.4	4.3	5.4	47.1	5.0	6.7	32.5	5.8	6.7	7.6	4.5
CV	3.6	5.0	5.5	34.5	5.7	6.7	27.8	5.9	6.5	7.0	4.9
CAGR	0.2	0.0	1.4	8.1	-0.5	0.5	0.1	1.3	1.5	1.3	0.0

As per the table, KPR Mill has shown good performance in managing the costs as CAGR is negative. Ambika mills is maintaining the costs for 13 years without any increase and Amarjothi mills and Rajapalayam mills allowed only little costs to increase when compared to the sales. Although Ramakrishna mills showed a CAGR of 0.1, the CV is high with 27.8%. The rest of the companies have a cost CAGR range from 1.3 to 1.5. Abnormal CV of 34.5% with 8.1 CAGR noticed in Kandagiri mills.

The operating profit for all the companies is given in the following table.

Table 4: Showing the operating profit from 2011 to 2023 (Rs in lakhs)

Year/ Company	Amarjothi spinning mills	Ambika cotton mills	Bannari Amman Spinning mills	Kandagiri spinning mills	KPR mill	Rajapalayam mills	Sri Ramakrishna mills	Sambandam spinning mills	Sri Lakshmi Saraswathi textiles	Super spinning mills	TOTAL
2010-11	1196	5109	6766	1386	8989	2793	91	1887	608	880	29706
2011-12	299	3146	-3622	-2036	2636	-2520	-1269	-2207	-1041	-7635	-14248
2012-13	-182	4036	3963	804	13496	2017	-535	1329	858	32	25816
2013-14	2474	5943	4499	595	14992	3443	-613	1355	305	-21	32973
2014-15	1586	6347	1671	183	16617	231	-858	421	-66	-2113	24020
2015-16	681	5718	2689	-1161	18775	1053	-650	75	-482	-2650	24048
2016-17	1671	7123	1210	-2665	28319	3278	-764	1238	-451	-2326	36635
2017-18	860	7839	184	-1682	29449	786	-753	461	-619	-2433	34092
2018-19	1276	8584	1027	-1721	37538	-186	693	403	-753	-2331	44529
2019-20	1232	6837	-1824	-1667	34021	-2492	1078	171	-1138	-2278	33940
2020-21	888	9006	-1821	-246	54686	-5283	124	1009	-144	-797	57422
2021-22	1873	23903	7182	-216	89486	3518	267	2106	424	228	128772
2022-23	1481	13863	-5421	-186	69463	2043	3	-1930	-2048	-1337	75931
X	1180	8266	1269	-662	32190	668	-245	486	-350	-1752	41049
StD	691	5398	3809	1243	25351	2701	679	1299	805	2142	33383
CV	58.6	65.3	300.0	-187.7	78.8	404.4	-277.4	267.3	-230.1	-122.2	81.3
CAGR	1.7	8.0	-198.3	-185.7	17.0	-2.4	-23.3	-200.2	-209.8	-203.3	7.5

It is shown as; the profits of textile companies have a CAGR of 7.5 for the corresponding period and the growth rate of profit is better than sales and cost of sales.

The operating profit is given as percentage on sales in the table given below.

Table 5: Showing the operating profit from 2011 to 2023 (as % on sales):

Year/ Company	Amarjothi spinning mills	Ambika cotton mills	Bannari Amman Spinning mills	Kandagiri spinning mills	KPR mill	Rajapalayam mills	Sri Ramakrishna mills	Sambandam spinning mills	Sri Lakshmi Saraswathi textiles	Super spinning mills	TOTAL
2010-11	9.6	16.0	12.4	9.1	8.5	8.6	1.3	9.1	6.0	1.8	8.8
2011-12	2.3	8.1	-7.9	-16.1	2.2	-7.7	-30.1	-11.8	-10.7	-20.2	-4.3
2012-13	-1.1	10.1	7.1	5.0	9.0	5.9	-14.1	6.1	7.5	0.1	6.6
2013-14	12.5	12.5	6.4	3.1	7.6	7.9	-35.4	5.3	2.4	0.0	6.8
2014-15	7.9	12.8	2.5	1.0	8.0	0.6	-52.8	1.7	-0.6	-4.8	5.0
2015-16	3.5	11.6	3.5	-8.0	9.6	2.7	-34.9	0.4	-4.4	-7.6	5.2
2016-17	7.7	13.5	1.4	-34.1	12.8	8.1	-70.2	5.9	-4.7	-7.9	7.4
2017-18	4.5	13.4	0.2	-30.9	11.7	1.8	-56.5	2.4	-5.9	-9.3	6.5
2018-19	6.0	13.1	1.0	-24.8	12.6	-0.5	25.6	1.9	-6.7	-11.2	7.6
2019-20	6.7	11.0	-2.0	-62.8	11.7	-7.0	34.3	0.9	-12.3	-15.6	6.2
2020-21	5.3	14.2	-2.1	-96.9	18.5	-12.8	5.9	4.4	-1.7	-16.3	10.6
2021-22	7.5	26.0	5.6	-67.9	22.0	5.1	6.1	5.9	2.8	2.4	16.4
2022-23	7.1	16.4	-5.0	-151.2	14.7	2.4	0.1	-7.3	-13.6	-15.6	9.2
X	6.1	13.7	1.8	-36.5	11.5	1.2	-17.0	1.9	-3.2	-8.0	7.1
StD	3.4	4.3	5.4	47.1	5.0	6.7	32.5	5.8	6.7	7.6	4.5
CV	55.7	31.3	303.9	-129.1	43.9	576.1	-191.1	300.2	-209.5	-94.6	63.9
CAGR	-2.4	0.2	-193.2	-224.1	4.3	-9.4	-19.9	-198.3	-206.5	-217.9	0.3

The table shows that, other than KPR mill and Ambika cotton mills, all companies have negative CAGR with high volatility. Amarjothi, Bannari Amman spinning mills, Sambandam and Rajapalayam mills have average results on positive side.

Coefficient of Variance (CV) Analysis:

If CV is analysed with the value of sales, the companies with most consistent records are Sri Lakshmi Saraswathi textiles (18.0%), Amarjothi Mills (18.5%) and Sambandam mills (19.7%). All these three companies are also consistent in the cost of sales. The actual performance of the companies is measured by operating profit in which, Amarjothi mills (58.6%), Ambika mills (65.3%) and KPR mills (78.8%) show the most consistent numbers with positive values. In all the metrics, Kandagiri mills have high volatility which denotes financial instability.

For estimating the relationship between a dependent variable and one or more independent variables, regression analysis is used. Operating profit is considered as dependent variable and costs such as raw material cost, power cost, employee cost, manufacturing expenses, overheads, finance cost and depreciation are considered as independent variables for this regression testing. The regression statistics are given in the following table.

Table 6: Regression Analysis results

Variable	*Coefficients*	*Std Error*	*t Stat*	*P-value*
Profit	-133449.416	84564.84	-1.57807	0.17538
Raw material cost	-0.20811	0.15147	-1.37392	0.22786
Power & Fuel cost	-1.48842	0.83371	-1.78530	0.13427
Employee cost	-0.17730	0.55118	-0.32166	0.76072
Other manufacturing expenses	6.71213	2.32454	2.88751	0.03429
Overheads	3.99438	2.10146	1.90076	0.11575
Finance cost	-3.54500	2.01815	-1.75656	0.13934
Depreciation	5.19310	3.36250	1.54441	0.18314

Source: Regression analysis output from Microsoft Excel.

Based on table 6, the summary shall be given as follows:

i) Raw material cost – This variable has t stat of -1.37392 with a probability value of 0.22786 > from 0.05 and a negative regression coefficient of -0.20811. This suggests that the raw material cost has no significant effect on profit.

ii) Power and fuel cost – This variable has t stat of -1.78530 with a probability value of 0.13427 > from 0.05 and a negative regression coefficient of -1.48842. This suggests that the power and fuel cost have no significant effect on profit.

iii) Employee cost – This variable has t stat of -0.32166 with a probability value of 0.76072 > from 0.05 and a negative regression coefficient of -0.17730. This suggests that the employee cost has no significant effect on profit.

iv) Other manufacturing expenses – This variable has t stat of 2.88751 with a probability value of 0.03429 < from 0.05 and a positive regression coefficient of 6.71213. This suggests that the employee cost has significant effect on profit.

v) Overheads – This variable has t stat of 1.90076 with a probability value of 0.11575 > from 0.05 and a positive regression coefficient of 3.99438. This suggests that the employee cost has significant effect on profit.

vi) Finance cost – This variable has t stat of -1.75656 with a probability value of 0.13934 > from 0.05 and a negative regression coefficient of -3.54500. This suggests that the finance cost has no significant effect on profit.

vii) Depreciation – This variable has t stat of 1.54441 with a probability value of 0.18314 > from 0.05 and a positive regression coefficient of 5.19310. This suggests that the depreciation has significant effect on profit.

The regression model shows an R^2 value close to 0.96, meaning that approximately 96% of variation in operating profit is determined jointly by the variables such as raw material cost, power & fuel cost, employee cost, other manufacturing expenses, overheads, finance cost and depreciation.

XI. SUMMARY OF FINDINGS AND CONCLUSION

From the analysis done, the obtained results are given as summary of findings followed by conclusion.

H1: The textile industry is growing significantly in Tamil Nadu in terms of sales.

Based on table 1, the sales performance of the industry is growing at a CAGR of 7.2 from the year 2011 to 2023. This study was aimed at understanding the behaviour and trend of sales of textile manufacturing companies and it is evident that the textile industry is growing in Tamil Nadu, and the hypothesis (H1) is accepted.

H2: The cost is not changing significantly compared to sales.

As per the data given in table 3, the cost on sales which is defined by percentage shows a growth rate of 0. From the result it is understood that the cost of sales is growing at the same CAGR (7.2) on sales and the cost is changing significantly compared to sales. Hence the hypothesis (H2), cost is not changing compared to sales is rejected.

H3: There is no significant change in the profit.

According to the table 4, overall, the profit of the companies has a growth rate of 7.5 from the year 2011 to 2023. The CAGR of profit is little higher than the CAGR of sales and cost of sales for the corresponding period. Since there is significant change in the profit, the hypothesis (H3) is rejected.

H4: There is no association between cost and profitability.

From the detailed analysis, it is apparent that there is inter-relationship between sales, cost and profitability of textile companies. Based on the analysis and results given in the table 6, the overall costs have significant positive effect on the profitability, and this hypothesis (H4) is rejected.

Conclusion

After analysing the financial performance of 10 companies based on stability and growth, KPR mill tops the list with high growth and moderate volatility in the study period. It is followed by Ambika mills with solid growth and manageable volatility. In all the key metrics, the companies with high risk and deteriorating performances are Kandagiri mills, Sri Lakshmi Saraswathi textiles, Ramakrishna mills, Super spinning mills and Sambandam mills. The companies that show average performance with reasonable track records are Amarjothi mills, Bannari Amman spinning mills and Rajapalayam mills. KPR mill managed to overcome the challenges faced by the textile industry by the support received from its valued added garment segment and by reducing the power cost from the electricity generated from windmill and solar power sources. Product innovation, quality consistency and timely order delivery are the key strengths for the success of Ambika mills. Most of the other companies have focused on producing diversified and value-added products to sustain in the volatile business conditions. Failure in managing the rising power costs, not utilizing the favorable business conditions, cost inefficiencies and contraction in the export textile market are some of the factors the led to the overall failure for the companies like Kandagiri mills, Ramakrishna mills and Super spinning mills.

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