



Comparative analysis of power distribution companies in Andhra Pradesh

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Abstract: Indian Power Sector has made substantial progress both in terms of enhancing power generation and in making available power to widely distributed geographical boundaries. The Installed generation capacity in the country is about 288005 MW as on 31st January 2016. The Indian power distribution sector is witnessing a lot of activity of late with positives like increased consumer demand on the back of GDP growth, increased urbanization, rural electrification and increased private sector participation. Andhra Pradesh State Electricity Board (APSEB) similar to other SEBs in the country, was formed on 01 April, 1959 under the provisions of Electricity (Supply) Act 1948, had been responsible for power generation, transmission, and distribution and for the overall development of the power sector in A.P. Andhra Pradesh State Electricity Board was restructured as Andhra Pradesh Power Generation Corporation (APGENCO) to look after generation and Andhra Pradesh Power Transmission Corporation (APTRANSCO) to look after transmission and distribution and sale of electricity in the state of Andhra Pradesh from 01.02.1999. The Eastern Power Distribution Company of AP Limited (APEPDCL) came into existence from April 1st, 2000 as a result of dismantling of vertically integrated Andhra Pradesh State Electricity Board (APSEB) into functionally distinct entities undertaking Power Generation, Transmission and Distribution. The present study aims primarily to evaluate the profile and performance of APEPDCL. The study also focuses on the origin and development of power sector in Andhra Pradesh

INTRODUCTION:

Power sector is a critical infrastructure element required for the smooth functioning of the state economy. An efficient, resilient and financially robust power sector is essential for growth and poverty reduction. The availability of reliable, quality and affordable power helps in the rapid Agriculture and Industrial development and the overall economy of the state. The objective of this white paper is to provide an understanding of the dynamics of the power sector in Andhra Pradesh, various challenges being faced by the power sector which has aggravated due to

recent bifurcation of state, analyze the underlying causes and propose proactive measures to address the issues plaguing the Andhra Pradesh power sector. The Government of Andhra Pradesh was one of the pioneer states to initiate the power sector reforms in 1998. The erstwhile Andhra Pradesh State Electricity Board (APSEB) was unbundled into six entities to focus on the core operation of Power Generation (APGENCO), Power Transmission (APTRANSCO) and Distribution (APDISCOMS). Significant amount of investments were made for building up Generation capacity, strengthening Transmission and Distribution network,



industrial feeder segregation, loss reduction and improving quality of power supply. As a result of various initiatives that were taken up during the reform period (1998-2004), energy deficit was brought down to a mere 1.5 % as compared to all India energy deficit of 7.1 % during FY 2003-04. CRISIL had ranked AP state as No. 1 in 2003 among all the states based on the performance parameters for the power sector.

Objectives of the study

Present study objectives are

To study the evolution of power sector in Andhra Pradesh.

To study the financial performance in terms of profitability of the APEPDCL and APSPDCL.

To identify the achievements and future plans of APEPDCL.

Research methodology

This study is based on the secondary data which is collected from the various reports and websites of APTRANSCO, APEPDCL, APSPDCL Ministry of Power (GoI), research papers, journals, magazines, periodicals, newspapers and internet etc. The relevant theoretical and statistical information was collected from various books, journals, State Government, Ministry of Power, Planning Commission, all India statistical reports etc.

Overview of power Sector in Andhra Pradesh

The erstwhile Andhra Pradesh State Electricity Board which came into existence in 1959 was responsible for Generation, Transmission and Distribution of Electricity. Under Electricity Sector Reforms agenda, Government of Andhra Pradesh

promulgated Andhra Pradesh Electricity Reforms Act, 1998. The erstwhile APSEB was unbundled into one Generating Company (APGENCO), One Transmission Company (APTRANSCO) and Four Distribution Companies (APDISCOMs) as part of the reform process.

APTRANSCO came into existence on 1.02.1999. From Feb 1999 to June 2005 APTRANSCO remained as Single buyer in the state-Purchasing power from various Generators and selling it to DISCOMs in accordance with the terms and conditions of the individual PPAs at Bulk Supply Tariff (BST) rates. Subsequently, in accordance with the Third Transfer Scheme notified by GOAP, APTRANSCO ceased to do power trading and has retained powers of controlling system operations of Power Transmission

Andhra Pradesh Power Generation Corporation (APGENCO) & Transmission Corporation of Andhra Pradesh Limited (APTRANSCO) on 01.02.99. APTRANSCO was further unbundled i.e. 01.04.2000 into "Transmission Corporation" and four "Distribution Companies" (DISCOMS).

From Feb 1999 to June 2005 APTransco remained as Single buyer in the state - purchasing power from various Generators and selling it to DISCOMs in accordance with the terms and conditions of the individual PPAs at Bulk Supply Tariff (BST) rates. Subsequently, in accordance with the Third Transfer Scheme notified by GoAP, APTransco has ceased to do power trading and has retained with powers of controlling system operations of Power Transmission



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At present there are four distribution companies DISCOMS' namely the Eastern Power Distribution Company of A.P, APEPDCL, the Central Power Distribution Company of A.P,APCPDCL, the Northern Power Distribution Company of A.P, APNPDCL, the Southern Power Distribution Company of A.P, APSPDCL to carry out the distribution business and the retail supply business in their respective areas of

2. PROSPECTIVE OF APEPDCL: The Eastern Power Distribution Company of Andhra Pradesh Limited (APEPDCL) was formed on the 31st March, 2000 to serve as a Distribution Company of APTRANSCO, following the advent of power reforms in the country. APEPDCL, Visakhapatnam is one of the leading Indian power utilities serving a consumer base of over **5.52** million spread across five districts in the southern state of Andhra Pradesh. It has always been a pioneer in delivering technology centric customer care services to its customers. APEPDCL has **the lowest AT&C losses** and one of the best in terms of operational efficiency.

APEPDCL is responsible for undertaking distribution and bulk supply of power in the operation circles of Srikakulam, Visakhapatnam, Vizianagaram, East and West Godavari districts and 20 Divisions of Coastal Andhra Pradesh. APEPDCL supplies power to over 5.52million consumers belonging to different categories through a network consisting of **726 Sub-stations** of 33 KV level, 2932 feeders of 11 KV level and 1,68,140 distribution transformers of different levels. The Corporate Office and Headquarters of APEPDCL is situated at Visakhapatnam.

- The company achieved distribution losses of 6.33% as against 6.46% during previous year (2012-13). This is the lowest in APEPDCL history.
- The company recorded AT&C losses of 7.09% which is the lowest for APEPDCL so far as against 10.49% last year (2012-13). It is also the lowest for any state owned DISCOM in the country
- The Company achieved Metered Sales of 81.28 %
- Under HVDS system 951 Nos. smaller capacity DTRs have been erected for conversion of 1782 Nos. pump sets into HVDS with an expenditure of Rs.11.78 Crs
- Under 33 KV feeders/Interlinking lines, 1No feeder of total length 4 KM charged. (APEPDCL) was evaluated on the basis of some standardized parameters. It was observed that on some issues, an improvement in the performance was reported in the post-reforms period. In this chapter, the financial performance of the APEPDCL on the basis of specific financial aspects



Table-1 : Composition of different components of cost and its percentage in Sales (APEPDCL (Rees in Crores))

Year	Total Sales	Cost of Power	%	Employees Cost	%	Repair, Administration & other expenses	%	Depreciation expenses	%	Interest & financial charges	%	Total Expenditure	%
2004-05	1957.36	1631.54	83.35	177.00	9.04	44.51	2.27	93.94	4.80	87.81	4.49	2034.80	103.96*
2005-06	2106.17	1727.73	82.03	137.27	6.52	45.80	2.17	121.72	5.78	105.63	5.02	2138.15	101.52*
2006-07	2244.66	1939.74	86.42	186.56	8.31	48.52	2.16	139.04	6.19	108.28	4.82	2422.14	107.91*
2007-08	2568.85	2252.47	87.68	232.55	9.05	53.37	2.08	111.82	4.35	124.60	4.85	2774.81	108.02*
2008-09	3407.30	2953.10	86.67	232.20	6.81	63.38	1.86	157.63	4.63	133.44	3.92	3539.75	103.89*
2009-10	3870.72	3305.67	85.40	275.25	7.11	60.69	1.57	168.43	4.35	180.69	4.67	3990.73	103.10*
2010-11	4329.75	3589.41	82.90	451.98	10.44	67.29	1.55	179.66	4.15	186.94	4.32	4475.28	103.36*
2011-12	5350.37	4537.43	84.81	433.92	8.11	88.43	1.65	191.51	3.58	266.33	4.98	5517.62	103.13*
2012-13	4871.13	5406.72	111.00	537.24	11.03	111.26	2.28	209.76	4.31	291.03	5.97	6556.01	134.59*
2013-14	6033.81	5493.77	91.05	509.48	8.44	132.07	2.19	223.97	3.71	159.37	2.64	6518.66	108.04*
2014-15	7617.88	6835.23	89.73	971.62	12.75	297.25	3.90	252.42	3.31	326.44	4.29	8682.96	113.98*
2015-16	8433.21	7548.31	89.51	790.06	9.37	203.77	2.42	273.12	3.24	453.01	5.37	9268.27	109.90*
CAGR	0.129432	0.136155	0.005959	0.132767	0.002992		0.135159	0.005347		0.093013	-0.03222		0.146517

Source: annual reports of APEPDCL



Sales of APEPDCL increased from year to year, from this table we can understand the demand for power supply, in 2006-2007 sales were 7268.25 M.W but in 2010-2011 it became 10334.2, M.G for the last year of 2015-2016 it reached to 15186 M.G

STRENGTHS OF APEPDCL (Sub-stations & Lines Category wise Consumers)

- No. of 33/11 KV Sub-stations : 651
- No. of 33 KV Feeders : 371
- No. of 11 KV Feeders : 2652
- Length of LT Lines in KM : 71969.00
- Length of 11 KV lines in KM : 39604.97
- Length of 33 KV lines in KM : 5564.24
- Distribution transformers : 1,47,096
- 1. Domestic : 4512726
- 2. Non-Domestic : 429270
- 3. Agricultural : 212127
- 4. Industrial (LT) : 32398
- 5. Other LT : 87054
- 6. HT : 2805
- APEPDCL is certified for ISO 9001:2008 for its Quality Management System and certified for ISO 27001:2005 for its Information Security Management System.
- APEPDCL has set up a Solar Power Plant on pilot basis, first of its kind in India under Decentralized Distribution Generation (DDG) scheme in Paderu ITDA area of Visakhapatnam District.
- EPDCL prides itself for bagging "India Power Awards - 2012" presented on 29.11.2012 for 'Overall Utility Performance (Distribution) Mixed'.
- Also EPDCL has bagged 6th India Power Awards 2013 for the "Best Overall Performance (Agriculture)".

3. BUSINESS PLAN FOR APEPDCL: The licensee herewith submits the Business Plan for FY 2017-18 to FY 2023-24 for the review and approval of the Hon'ble Commission.

The Business Plan as submitted by the Licensee consists of the following sections

- Year Wise Load Growth
- Year Wise Distribution Loss Reduction with Specific Action Plan
- Metering Plan for Metering Interface Points
- Treatment of Previous Losses □□ Cost Reduction Plan
- Other important Financial analysis or parameters



Table:2 DEMAND FORCAST OF APEPDCL

	FY 2017-	FY 2018-	FY 2019-	FY 2020-	FY 2021-	FY 2022-	FY 2023-
Circle Name	18	19	20	21	22	23	24
Circle 1: Srikakulam	201	215	230	247	265	285	307
Circle 2: Vizianagaram	296	317	339	363	390	418	450
Circle 3: Visakhapatnam	909	987	1,075	1,175	1,288	1,416	1,561
Circle 4: Rajahmundry	654	704	760	821	889	964	1,046
Circle 5: Eluru	942	1,010	1,078	1,160	1,244	1,337	1,440
Total DISCOM	2,572	2,770	2,986	3,231	3,498	3,795	4,127

PROFITABILITY RATIOS OF APEPDCL AND APSPDCL.**Table-4.5: Net Profit as a percent of total sales in APEPDCL and APSPDCL****(Rupees in Crores)**

Year	APEPDCL			APSPDCL		
	Net Profit	Total Sales	Percent	Net Profit	Total Sales	Percent
2004-05	14.62	1979.8	0.74	10.38	2357.38	0.44
2005-06	28.9	2106.17	1.37	93.16	2854.9	3.26
2006-07	10.72	2244.66	0.48	56.92	3067.99	1.86
2007-08	-40.46	2568.85	1.58	82.10	3720.42	2.21
2008-09	20.62	3407.3	0.61	18.67	5113.13	0.37
2009-10	13.37	3870.72	0.35	5.68	5558.99	0.10
2010-11	12.81	4329.75	0.30	1.29	6525.44	0.02
2011-12	24.8	5350.37	0.46	5.67	7766.23	0.07
2012-13	-1680.55	4871.13	34.50	4672.91	7908.12	59.09
2013-14	-135.85	6033.81	2.25	400.84	9195.39	4.36
2014-15	-722.24	7617.88	9.48	1677.47	13173.62	12.73
2015-16	-471.86	8433.21	5.60	3429.90	14229.21	24.10
CAGR	-0.10044	0.12836	0.183713	0.621525	0.161616	0.395984
	Average Ratio		4.09			7.74

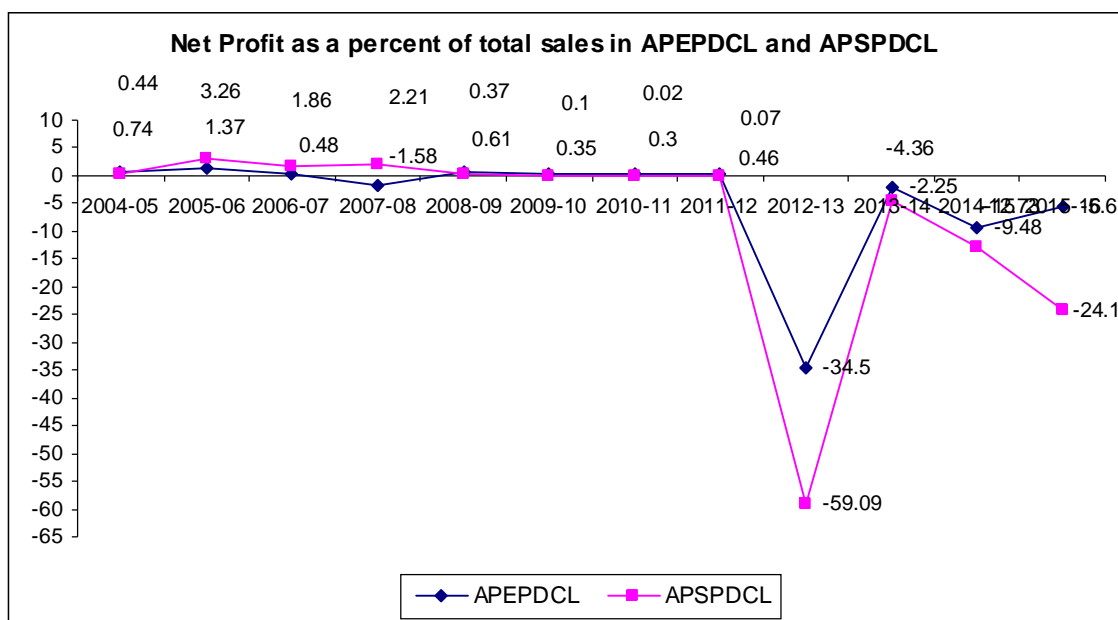
Source: Annual Reports of APEPDCL & APSPDCL

Table-4.5 presents the net profit as a percent of total sales of APEPDCL and APSPDCL for the period from 2004-05 to 2015-16 financial years. The net profit of APEPDCL fluctuated heavily during the period under consideration and moved between a lowest at Rs (-) 1680.55 crore in the year 2012-13 and a highest at Rs 28.9 crore in the year 2005-06. The total sales of the company have increased from Rs 1979.8 crore in the year 2004-05 to Rs 5350.37 crore in 2011-12. Though a sudden



decline is noticed in total sales in 2012-13, again the total sales rose to highest at Rs 8433.21 crore in the year 2015-16. Hence the net profit as a percent of sales of APEPDCL moved between a lowest at (-) 34.50% in the year 2012-13 and a highest at 1.37% in the year 2005-06.

The net profit of APSPDCL varied heavily during the period under consideration and moved between a low of Rs (-)46721.91 crore in 2012-13 and a high of Rs 93.16 crore in 2005-06. On the other hand the total sales of APPDCL have increased from Rs 2,357.38 crore in 2004-05 to Rs 14229.21 crore in 2015-16. The net profit as a percent of total sales of APSPDCL moved between a lowest at (-) 59.09% in the year 2012-13 and a highest at 3.26% in the year 2005-06. On the whole, it can be concluded that the net profit as a percent of APSPDCL is relatively more than that of APEPDCL.



Inference: APEPDCL showed positive growth over the years and APSPDCL showed positive growth in the ratio.

Trend of	Trend line	Trend(2025)
APEPDCL	$\text{Ratio}(\text{year}) = \text{year} * (-1.2292) + 8.814568$	-21.915432
APSPDCL	$\text{Ratio}(\text{year}) = \text{year} * (-2.64077) + 19.98796$	-593.91709

Inference: According to the trend APEPDCL will have more Net Profit as a percent of total sales by the year 2025.

t-Test: Two-Sample Assuming Equal Variances

	APEPDCL	APSPDCL
Mean	4.81	9.050833
Variance	94.98702	299.0733



Observations	12	12
Pooled Variance	197.0302	
Hypothesized	Mean	
Difference	0	
df	22	
t Stat	-0.74005	
P(T<=t) one-tail	0.233548	
t Critical one-tail	1.717144	
P(T<=t) two-tail	0.467095	
t Critical two-tail	2.073873	

Inference: ($p > 0.05$): The difference between APEPDCL and APSPDCL is not significant over the years with respect to the ratio. APSPDCL is showing higher mean value.

Correlation:

	<i>APEPDCL</i>	<i>APSPDCL</i>
APEPDCL	1	
APSPDCL	0.966074	1

Inference: Very high correlation is observed between APEPDCL and APSPDCL with respect to the ratio.

Table-4.6: Return on Share holders Funds(Rupees in Crores)

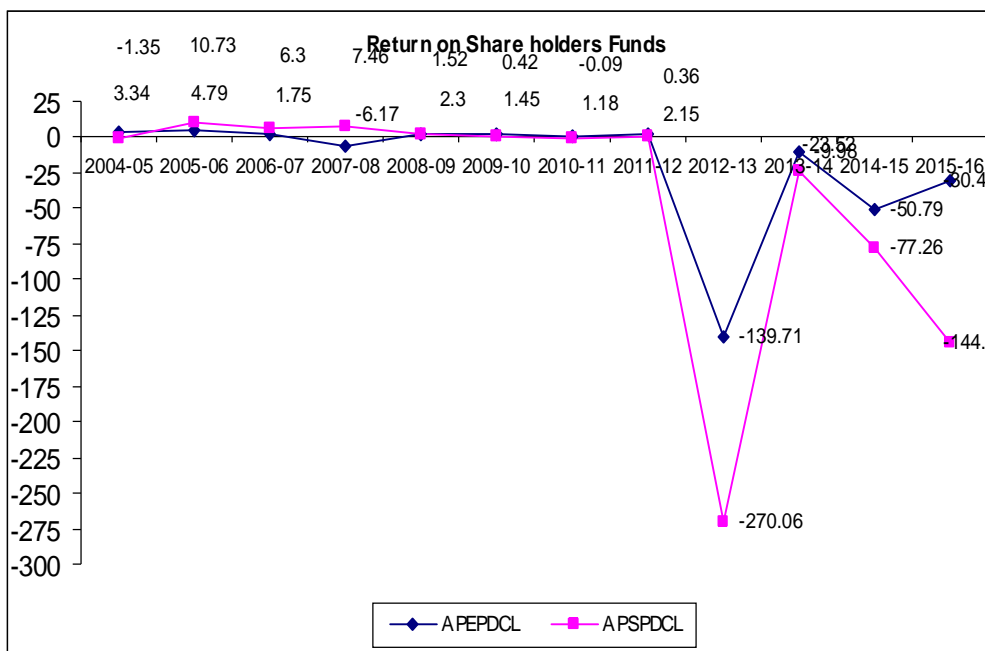
Year	APEPDCL			APSPDCL		
	PAT	Share holders Funds	Percent	PAT	Share holders Funds	Percent
2004-05	14.62	438.3	3.34	10.38	770.8	1.35
2005-06	28.90	603.45	4.79	93.16	868.1	10.73
2006-07	10.72	613.8	1.75	56.92	903.76	6.30
2007-08	40.46	656.19	6.17	82.09	1100.85	7.46
2008-09	20.62	895.04	2.30	18.67	1227.57	1.52
2009-10	13.37	924.51	1.45	5.68	1350.24	0.42
2010-11	12.81	1082.73	1.18	1.29	1441.31	0.09
2011-12	24.80	1153.37	2.15	5.67	1596.17	0.36
2012-13	1680.55	1202.91	139.71	4672.91	1730.34	270.06
2013-14	135.85	1360.57	9.98	400.84	1704.52	23.52
2014-15	722.24	1422.14	50.79	1677.47	2171.15	77.26
2015-16	471.86	1550.09	30.44	3429.90	2380.3	144.10
CAGR	0.335792	0.111004	0.202195	0.621525	0.098519	0.4758
	Average Ratio		18.34			40.80

Source: Annual Reports of APEPDCL & APSPDCL



Table-4.6 indicates the return on shareholders funds made by APEPDCL and APSPDCL during the period from 2004-05 to 2015-16 financial years. According to that data the net profit or PAT of APEPDCL fluctuated heavily during the period under consideration and moved between a lowest at Rs. (-) 1680.55 crore in the year 2012-13 and a highest at Rs 28.90 crore in 2005-06. The Shareholders funds of APEPDCL have increased continuously from Rs 438.3 crore in 2004-05 to Rs 1550.09 crore in 2015-16. Hence the net profit of APEPDCL and share holder funds indicates lowest at (-) 139.71 % in the year 2012-13 and highest at 4.79% in the year 2005-06.

The net profit or PAT of APSPDCL varied heavily during the period under consideration and moved between a low of Rs(-) 4672.91 crore in 2012-13 and a high of Rs 93.16 crore in 2005-06. The shareholders funds of APSPDCL have increased from Rs 770.8 crore in 2004-05 to Rs 1730.34 crore in 2012-13. After that in the year 2013-14, these funds have declined to Rs 1704.52 crore and increased the share holder funds of APSPDCL at crore in 2015-16. The return on shareholders funds of APSPDCL moved between a lowest at 270.06 % in the year 2012-13 and a highest at 10.73 % in the year 2005-06. It can be concluded that the return on shareholders funds of APSPDCL is far more than that of APEPDCL.



Inference: APEPDCL showed positive growth over the years and APSPDCL showed positive growth in the ratio.

Trend of	Trend line	Trend(2025)
APEPDCL	Ratio(year)=year*(-5.67224)+41.2143	-100.59161
APSPDCL	Ratio(year)=year*(-13.8547)+104.6761	-241.6914



Inference: According to the trend APEPDCL will have more Return on Share holders' Funds by the year 2025.

t-Test: Two-Sample Assuming Equal Variances

	<i>APEPDCL</i>	<i>APSPDCL</i>
Mean	21.17083	45.26417
Variance	1621.354	6895.3

Year	APEPDCL	APSPDCL
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Observations	12	12
Pooled Variance	4258.327	
Hypothesized	Mean	
Difference	0	
df	22	
t Stat	-0.90438	
P(T <= t) one-tail	0.187795	
t Critical one-tail	1.717144	
P(T <= t) two-tail	0.375589	
t Critical two-tail	2.073873	

Inference: ($p > 0.05$): The difference between APEPDCL and APSPDCL is not significant over the years with respect to the ratio. APSPDCL is showing higher mean value.

Correlation:

	<i>APEPDCL</i>	<i>APSPDCL</i>
APEPDCL	1	
APSPDCL	0.948725	1



	PAT	Number of Equity Shares	Earning per Share	PAT	Number of Equity Shares	Earning per Share
2004-05	14.62	12.2	1.20	10.38	35.87	0.29
2005-06	28.90	12.2	2.37	93.16	35.87	2.60
2006-07	10.72	12.2	0.88	56.92	35.87	1.59
2007-08	40.46	12.2	3.32	82.09	35.87	2.29
2008-09	20.62	12.2	1.69	18.67	35.87	0.52
2009-10	13.37	12.2	1.10	5.68	35.87	0.16
2010-11	12.81	12.2	1.05	1.29	35.87	0.04
2011-12	24.80	12.2	2.03	5.67	35.87	0.16
2012-13	1680.55	12.2	137.75	4672.91	35.87	130.27
2013-14	135.85	12.2	11.14	400.84	35.87	11.17
2014-15	722.24	12.2	59.20	1677.47	35.87	46.77
2015-16	471.86	12.2	38.68	3429.90	35.87	95.62
CAGR	0.335792	0	0.335648	0.621525	0	0.621235
	Average Ratio		19.98			23.07

Inference: Very high correlation is observed between APEPDCL and APSPDCL with respect to the ratio.

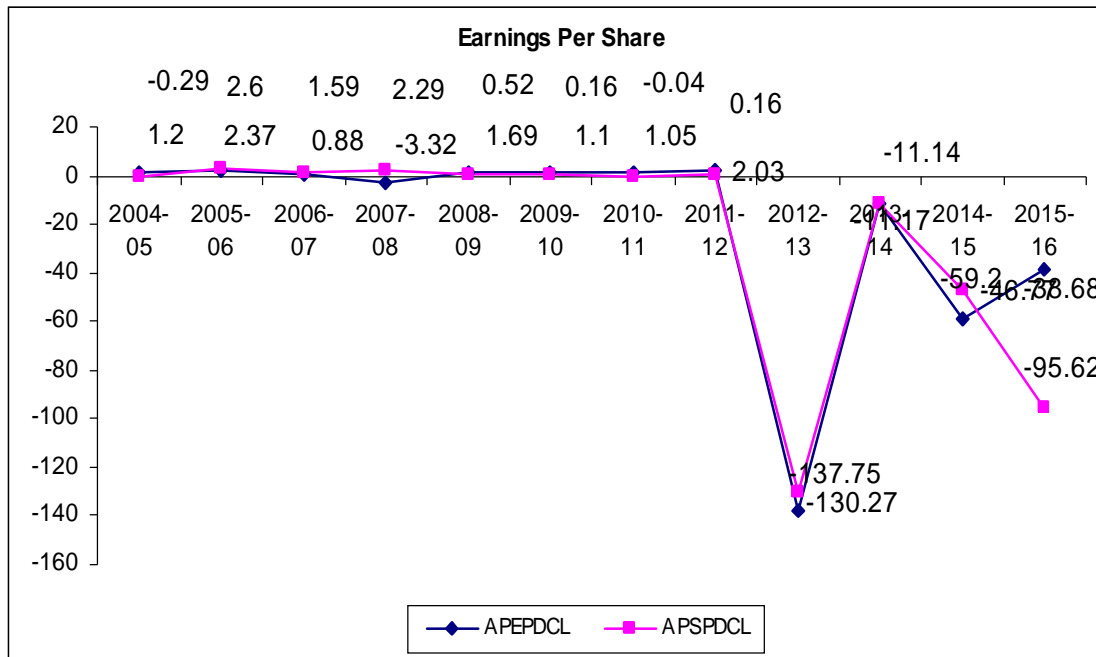
Table-4.7: Earnings per Share (Rupees in Crores)

Table-4.7 shows the earning per share of APEPDCL and APSPDCL for the period from 2004-05 to 2015-16 financial years. The net profit or PAT of APEPDCL fluctuated heavily during the period under consideration and moved between a low of Rs. (-) 1680.55 crore in the year 2012-13 and a highest of Rs 28.90 crore in 2005-06. The number of equity shares noticed at 12.2 lakhs/crores during the period 2004-05 to 2015-16 under consideration. The earnings per share of APEPDCL moved between a lowest of Rs (-) 137.75 in the year 2012-13 and highest of Rs 2.37 in the year 2005-06.

The net profit or PAT of APSPDCL varied heavily during the period under consideration and moved between a low of Rs(-) 4672.91 crore in 2012-13 and a high of Rs 93.16 crore in 2005-06. The number of equity shares of APSPDCL stood at 35.87 lakhs/crores during the period under consideration. The earning per share of



the company varied between a lowest at Rs (-) 130.27 in the year 2012-13 and a highest at Rs 2.60 in the year 2005-06. On the whole, it can be concluded that the earning per share of APEPDCL is marginally more than that of APSPDCL.



Inference: APEPDCL showed positive growth over the years and APSPDCL showed positive growth in EPS.

Trend of	Trend line	Trend(2025)
APEPDCL	$EPS(year) = year * (-6.112) + 44.1957$	-108.6043
APSPDCL	$EPS(year) = year * (-7.85428) + 59.39916$	-152.1613

Inference: According to the trend APEPDCL will have more **EPS** by the year 2025.

t-Test: Two-Sample Assuming Equal Variances

	APEPDCL	APSPDCL
Mean	21.70083	24.29
Variance	1679.725	1941.868
Observations	12	12
Pooled Variance	1810.797	
Hypothesized Difference	Mean 0	
df	22	
t Stat	-0.14904	



P(T <= t) one-tail	0.44144
t Critical one-tail	1.717144
P(T <= t) two-tail	0.88288
t Critical two-tail	2.073873

Inference: ($p > 0.05$): The difference between APEPDCL and APSPDCL is not significant over the years with respect to the ratio. APSPDCL is showing higher mean value.

Correlation:

	APEPDCL	APSPDCL
APEPDCL	1	
APSPDCL	0.917527	1

Inference: High correlation is observed between APEPDCL and APSPDCL with respect to the ratio.

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