

Distribution franchisee not a sustainable tool for reducing AT & C loss

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Abstract

Keywords

AT&C Loss,
T & D Loss,
L.T H.T,
PPP,
Utility,
Turnaround,
SPV.
Distribution
Franchisee,
IBDF,
BOOT

The study attempts to find out the relevance and sustainability of Franchisee model as performance indicators which correlates pre franchisee and post franchisee operation and application of structural mechanism to reduce Aggregate Technical & Commercial loss. Privatization is an policy initiative instrumental to strategic power sector. Restructuring in the sector is required as per the regulatory framework. The financial health of the distribution sector witnesses substantial financial losses caused by operational inefficiencies ,inadequate tariff, absence of skilled man power, use of obsolete technology , lack of accountability. And inadequate subsidy. The utility witnessed AT&C Loss 40%, Distribution Loss 30% .The Board of Management in deliberation with the regulator and potential franchisee proposed to develop a model to bring down the AT&C Loss level to 15% over a period of five year. The primary objective is to augment the collection efficiency, Realization per unit and minimizing AT & C loss through engagement of Distribution Franchisee after adoption of Input Based Franchisee-Incremental Revenue Sharing (IBF-IRS) Model .This article will provide new dimension and academic support to make the power utility vibrant, efficient, and bring down the AT&C loss to 15% over a period of five years with significant changes in the system. The study aims at assessing the impact on value addition and additional generation of Revenue with no extra administration cost. The secondary data is relevant for study and analysis to draw conclusions and findings.

Introduction

The electricity Act 2003 was enacted to consolidate acts governing generation, transmission, distribution, trading and metering. The new act aims at development of power sector by promoting competition and bringing in transparency for opening avenues for participation of private sector entrepreneurs. There is a provision for deployment of Distribution franchisee in the utility as provided in section 14 of Electricity Act. Distribution franchisee is a process of public private participation mode outsourcing distribution of Technical and commercial activities with approval by Regulator. DF is an authorized agent which works on behalf of Distribution Licensee in designated area to manage power distribution business including supply of bill, collection of revenue and maintenance with an effort to improve operational efficiency and quality service intends to appoint IBDF(Input based distribution franchisee).The DF shall focus on Energy Audit, Accounting, Feeder metering, DT metering, strengthening Distribution network, The utility (CESU) adopted strategies to reduce Overall AT&C loss The franchisee is an extended support to strengthen the deficiency in the operation, Management and technological obsolescence. Basing upon past performance and accumulation of arrear 25,194.87 Lakhs up to FY2011-12 and taking into account of negative net worth, and requirements of fund to meet addition and up gradation of infrastructure ,less realization of revenue from sale of power the Regulator (Orissa Electricity Regulatory commission) after deliberations with potential franchisee a unique model has been developed in 14 divisions where loss level is very high as present revenue realization per unit(RPU) is less than Bulk supply Price (BSP).This is called input based

franchisee with incremental Revenue sharing(IBF-IRS) under BOOT model. The revenue realization is only 1.57 against power purchase cost 2.11 besides. The rationale for Franchisee model is to address selection of franchisee operator through fair, transparent, competitive bidding by adoption of methodology to reduce Technical and distribution loss and major improvement in stakeholders expectation through consumer interface. Under input based franchisee the DF has to pay the utility all the energy received from agreed bulk supply tariff. The utility adopted engagement of Franchisee operation in fourteen division as outlined under Build own operate transfer (BOOT) Model.

Distribution of franchisee (DF) operation in CESU

Engagement of Input Based Franchisees is one of the AT & C Loss reduction Strategies adopted by CESU, since Financial Year 2012-2013. Four Numbers of Input Based Franchisees on Incremental Revenue Sharing (IBF-IRS) Model have been engaged in Fourteen (14) Divisions of CESU Covering 12,85,669 LT Consumers out its Total LT Consumer Base of 16,69,716 (76.99%) at the time of Franchisee Engagement (2012-2013). M/s Enzen Global Solutions Private Limited (M/s ENZEN), M/s Feedback Electricity Distribution Company Private Limited (M/s FEDCO), M/s Riverside Utilities Private Limited (M/s RUPL) and M/s Seaside Utilities Private Limited (M/s SUPL) have been engaged in the Fourteen (14) Divisions of CESU out of its Twenty (20) Division to bring down AT & C Losses to a level of 15% within a Period of 5 Years (Starts from April 2014 to March 2019). All the Four Franchisee and their respective Electrical Divisions are tabulated below. But for our study of research only four division selected as mentioned below

Franchisee operation under CESU (w.e.f 2013 to 2020)

Name of Franchisee	Name of Division	Date of starting operation	No of LT Consumer as on 1.4.13	No of consumer as on 31.3.19	Period of Engagement	
1	M/S SUPL (M/S Seaside Utilities Private Limited)	NED. Nimapada	01.02.2013	109442	172566	Initially CESU has engaged Franchisee (M/s SUPL) for 1 Electrical Divisions from April 2013 to 31 st March 2019 & thereafter no further Extension was given. Nimapada Electrical Divisions was taken back under CESU control.
2	M/S RUPL (M/S Riverside Utilities Private Limited)	CED, Cuttack	01.02.2013	82243	148454	Initially CESU has engaged Franchisee (M/s RUPL) for 3 Electrical Divisions from April 2013 to 31 st March 2019 & thereafter no further Extension was given. Respective Electrical Divisions was taken back under CESU control.
		AED, Athagarh	01.02.2013	69030	118929	
		SED, Salepur	01.02.2013	65470	109606	

The major objectives of deployment of Franchisee operator is to bring down AT&C loss through use of Advanced technology, new way of operational and managerial practice, with significant changes in distribution system, making physical infrastructure remunerative, ensuring collection and billing efficiencies and improving quality of supply.

Importance of study

The main importance of my study is to evaluate and analyze how the private participation (Application of franchisee model as an aid to micro privatization) will bring about a positive transformation in Central Odisha by deploying smart Grid technology to supply reliable quality supply, customer centric approach. The micro privatization no doubt will pave way to improve modernize system, improve reliability reduce AT&C Loss .privatization of the utility aims to achieve successful turnaround of CESU (the Utility) as an alternate form for enhancing revenue sustainability.

Literature Review

(Totare et al 2005) mentioned that the distribution franchisee model in public-private partnership (PPP) initiative has emerged as a solution affecting the power sector and become a means to break the vicious circle of high AT&C loss, low investment, low consumer satisfaction and in turn low realization. The first input and investment based distribution franchisee

has been implemented in Bhiwandi circle of Maharashtra with exemplary success. As a result utilities, private sector players and State Government are pursuing this model aggressively and trying to replicate in several areas. Revenue models with suitable margin can be suitably designed so that the franchisees can invest in the existing infrastructure, reduce loss and which in turn can recover their investment with appreciable return.

(Joshi et al 2007) mentioned many sources report that farmers in Uttar Pradesh, and across India more generally, are well-organized and vocal proponents of electricity subsidies. Nonetheless, not every small interest group wins its preferred policy outcomes against the majority of admittedly unorganized consumers, and certainly not when these preferred policies are bankrupting the public sector. He has two hypotheses, in addition to the organizational capacity of the agricultural sector, that might explain the political influence of farmers who own electric tube wells, especially why when politicians make the decision to raise electricity prices, they are often voted out of office during the next election cycle . First, owners of electric tube wells often sell water to farmers who are too poor to own their own irrigation equipment. The subsidy that we have identified as power theft is thereby enjoyed by a larger rural population than merely the owners of electric tube wells. It is possible that without this subsidy, tube well owners would raise water rates on their neighbours,

(Rao et al 2009) stated that the commercial performance of the Discoms continues to be a drag on the sector. The improvements have been marginal viz. billing efficiency improving from 68.4% (2002-03) to 69.8% (2005-06) and collection efficiency from 92.7% to 93.8% on a national level. The Discoms must actively invest in improving the management systems, collating and using information on a routine basis, and in changing the operating culture. There is a huge scope for collaborative relationship with the private sector, and successful examples in distribution franchisees have shown that. Input-based franchisees have been a successful example in private public partnerships. In many states, a number of diluted models of franchisees were implemented, with middling results.

(Anand et al 2009) et al stated that the electricity distribution franchisee (DF) arrangement is based on principles of Public Private Partnership (PPP) wherein specific functions for a demarcated area within the total licensed area of distribution is franchised out by the distribution utility to a private sector entity, while the state retains the ownership of assets. In the initial years, such an arrangement was restricted to outsourcing of functions such as billing, collection and repair & maintenance (R&M) of transformers. Over time, it evolved into incentive-based arrangements for the private sector to invest in the distribution network and be responsible for all functions after receiving energy from the utility right up to collection of revenues from consumers. The DF arrangement was given formal recognition through the Electricity Act 2003. The scheme is now being taken up by many states in both rural and urban areas. While the motivation behind it in rural areas is driven by the need to extend access to electricity, in urban areas the reason is purely commercial. However, till recently, input based franchising did not gain much acceptance since states were concerned with the adverse socio-political repercussions.

(Nawaz-ul-Huda et al 2010) explained that the selection of appropriate and cost-effective technology is the key to improving the distribution systems with their extensive conductors and installations. The Distribution Franchisee should also be able to cater to future demand scenarios and to provide optimal solutions and not simply confined to analysing the present needs. The Distribution Franchisee allows for periodic updating and monitoring and mapping of the Electrical systems at consumer level and Consumer Database helps in the way of improved load

management, loss reduction, better revenue realisation, asset and work management and possibly better consumer relationships.

(G Schwiege et al 2011) et al find that all urban areas with a population of more than 30,000 (10,000 in the case of special-category states) would be covered. In addition, rural areas with significant loads, works of separation of agricultural and domestic feeders and of high-voltage distribution system (11 kV) would also be taken up. Funding for this project consists of a 100% loan for all projects selected. As the project nears completion and the required targets are met, the loan will be progressively converted to a grant. For utilities having Aggregate Technical and Commercial (AT&C) losses of above 30%, the expected reduction would be 3% per year. For utilities with AT&C losses below 30%, the expected reduction would be 1.5% per year. India's distribution network starts at the 33-kV substation and ends at the customer's meter, or doorstep in the case of unmetered rural domestic customers. Each state has its own distribution network, and the old vertically integrated SEBs have been unbundled into smaller distribution companies in many states. In Delhi and Orissa, distribution companies have been privatized as joint ventures with entities owned by the state government. There are also several private distribution companies that have operated for several decades, as described above. Some states like Tamil Nadu and Punjab continue to have a single distribution entity for the entire state. Recently, attempts have been made to franchise out segments of the distribution business to private entities to bring in improvements. Torrent Power, for example, took over the Bhiwandi area (near Mumbai) under an input-based franchisee model. India's distribution system included more than 6.76 million ckm of lines and over 282,000 MVA of distribution transformer capacity as of March 2008. This is assumed to be growing at an annual average rate of around 3% and 7.5%, respectively.

(Dey et al 2012) stated that year of 2000, experienced the near collapse of electricity distribution sector in India with the highest ever uncontrolled T & D loss and financial bankruptcy. To arrest the spiralling T & D Loss a lot of initiatives were announced to encourage the private sectors to encourage competition and for sustainable growth in electricity distribution.

Electricity is one of the driving forces in the economic development; the shortage of electricity became one of the bottlenecks in the overall economic development. . After completing the infrastructure development, improving the quality of services than the third step of revenue sustainability i.e bridge the gap of revenue and expenditure is again a mind boggling task. His present paper is a humble attempt to explain the distribution franchisee functioning with the help of SHGs and contribution towards revenue sustainability in Electricity sector.

(Bhatt et al 2012) stated that the distribution sector, the major objectives of the reform were to restrain the huge distribution losses, improve the technical performance of distribution networks and increase private participation. His paper describes what impact the reform actually has and how the performance of the distribution sector is affecting various energy efficiency enhancement programs. An analytical framework based on Institutions of Sustainability and socio-technical system is presented to analyze the technological change in the distribution sector with the institutional change. The electricity distribution companies are key factor in the analysis and factors affecting their decisions regarding the choice of energy efficient technology adoption in the distribution network.

According to world bank study (2016) around 1.4 billion people across the globe are not having power. IEA 2015 Out of 1.4 billion 300 million belongs to India. (Thakur et.al, 2017) Transmission sector carried out in phased manner as per technical studies. (However grown in unplanned disorganized manner but unable to meet the growing demand of consumers. over the period even regulatory commission formed distribution sector in majority states are still running with inefficiency, losses with inadequate investments. (Kamdar, 2015) The losses passed to consumer by way of high tariff, poor inadequate power supply. As reason behind high losses. (Kale, 2014 Krishan and Gupta 2017) the distribution sector is the provider of revenue to power value chain meanwhile generation and distribution sectors are earning profit

Research gap

Fewer study has been done factor contributing role model of Franchisee operation.

Early study has not done justification on privatization of utility in central Odisha context.

In Odisha consumer behavior and mix is different and its impact not measured successfully by any Research scholar.

Objectives of study

The main objectives of the study

To focus on Reducing AT&C by adoption of Digitalization and New technology during post Franchisee operation.

To study Revenue sustainability of the Distribution utility and comparative study on pre and post Franchisee after adoption of input based franchisee with incremental Revenue sharing (IBF-IRS).

Based on objectives present study have following Hypothesis

H0 - There is no significant difference in Revenue Generation and AT&C Loss reduction after Privatization and operation of franchisee model.

H1 - There is significant difference in Revenue collection followed by substantial reduction in AT&C Loss after adoption of franchisee model.

Research Methodology

Instrument development and validation

A survey questionnaire will be designed to study the impact made by the above identified factors on privatization model of operation due to franchisee mode of operation of utility.. The instrument will measure operational factor, environmental factor, consumer perception ,economic growth, logistic analysis, effective communication, Behavioral approach ,employee motivation, governmental support, technical presentation, engineering economics, competitive advantage, value addition employee morale, policy directives. Public private partnership's performance will measure to compensate to commercial as well as technical loss will attract long term prospects and service provider as performance measure.

Data analysis & Interpretation

Division wise performance prior to Franchisee operation. (Table-2)

**Divisional base year wise LT+HT performance of CESU as on 2011-12(Prior to Franchisee operation)
Four Division**

Division name	Input in Million Unit = (IMU)	Billed in Million Unit = (BMU)	Billing in Rupees (lakhs) = BR	Collection in Rupees (Lakhs) = CR	Billed in Efficiency in Percentage (%) = BE = (BMU/IMU) x 100	Collection Efficiency in Percentage (%) = CE = (CR/BR) x 100	Distribution Loss in Percentage (%) = DL = (100-BE)	Aggregate Technical & Commercial Loss in Percentage (%) = AT & C = (1-BE x CE/10000) x 100	Realization Per Unit (RPU) (Rs./Unit) = RPU = (CR/IMU) x 10
SED Salipur	155.90	59.20	1773.87	1290.94	37.99 %	72.78 %	62.01 %	72.35 %	0.83
CED Cuttack	368.30	164.60	6805.23	5933.73	44.69 %	87.19 %	55.31 %	61.03 %	1.610
AED Athagar	245.10	84.06	2972.95	2461.14	34.30 %	82.78 %	65.70 %	71.61 %	1.00
NED Nimapara	299.00	106.10	3291.66	2578.56	35.49 %	78.34 %	64.51 %	72.20 %	0.86

Collection Efficiency after Franchisee operation. (Table -3)

Franchisee collection efficiency of electrical divisions (LT+HT)

Franchisee	Franchised division	Collection efficiency in Percentage (%) = CE = Collection in rupees (CR) / Billing in Rupees (BR) X 100					2011-12	Increase(%) Decrease(%)
		2014-2015	2015-2016	2016-2017	2017-2018	2018-2019		
SUPL/RUPL	CED, Cuttack	77.881	87.180	90.474	82.527	83.352	87.19	(-)3.84
	AED, Athagarh	68.826	73.121	80.413	75.840	76.150	82.78	(-)6.63
	SED, Salepur	48.043	69.489	73.353	66.867	54.983	72.78	(-17.8)
	NED, Nimapada	62.880	76.128	81.441	75.543	76.222	78.34	(-2.12)

AT&C LOSS(%)= 1-unit billed/unit input* Revenue collected/Revenue billed*100

Billing efficiency after Franchisee operation (Table-4)

Franchisee billing efficiency of electrical divisions (LT+HT) Comparative view

Franchisee	Franchised division	Billing efficiency in percentage (%) = BE = Billed in Million Unit (BMU) / Input in MILLION unit (IMU) X 100								
		2012-2013	2013-2014	2014-2015	2015-2016	2016-2017	2017-2018	2018-2019	11-12 (Base year)	increase
SUPL/ RUPL	CED, Cuttack	42.865 %	58.020 %	44.695 %	46.566 %	48.834%	53.708 %	54.862 %	44.69 %	10.172
	AED, Athagarh	39.617 %	103.933 %	32.775 %	34.348 %	37.510 %	40.920 %	42.765 %	34.30 %	8.465
	SED, Salepur	39.026 %	43.192 %	46.400 %	43.018 %	46.519 %	46.500 %	51.285 %	37.99 %	13.295
	NED, Nimapada	31.359 %	35.596 %	35.596 %	34.873 %	37.473 %	40.765 %	43.628%	35.49 %	8.138

T&D Loss and AT&C Loss after Franchisee operation (Table-5)

M/S Seaside utilities private limited (SUPL) - Nimapada division

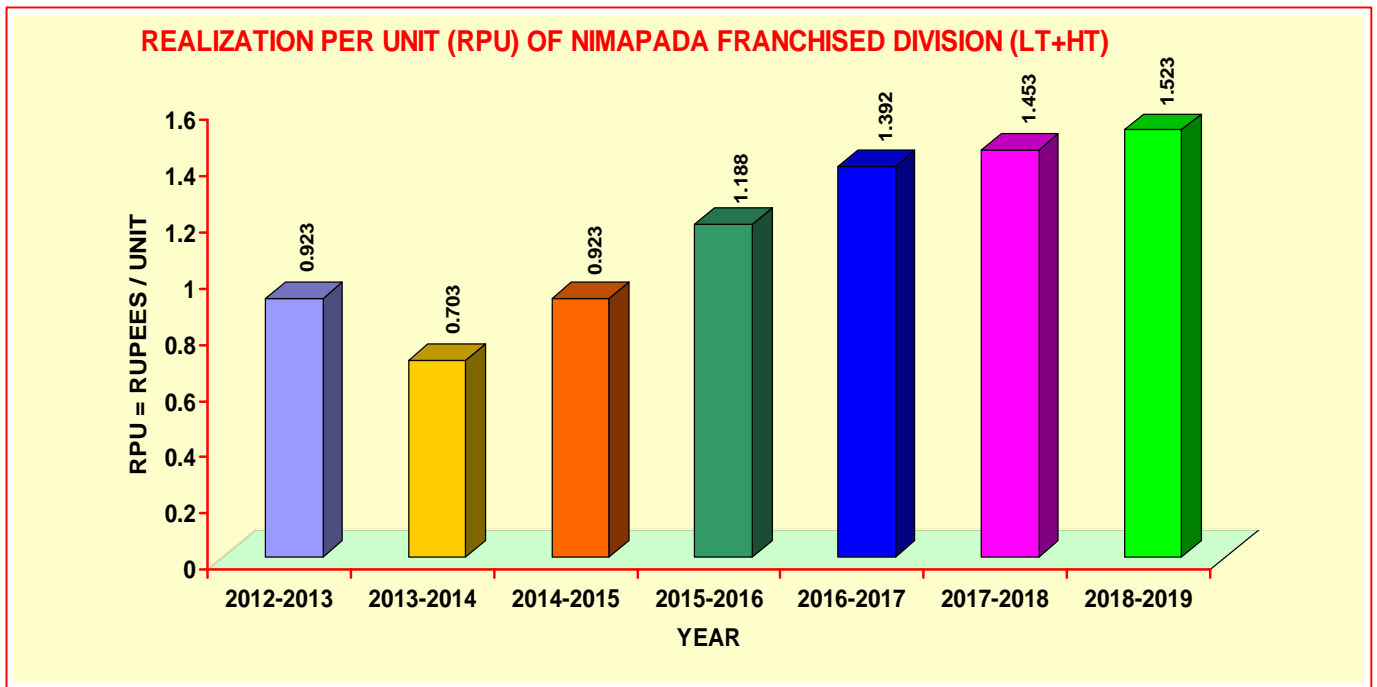
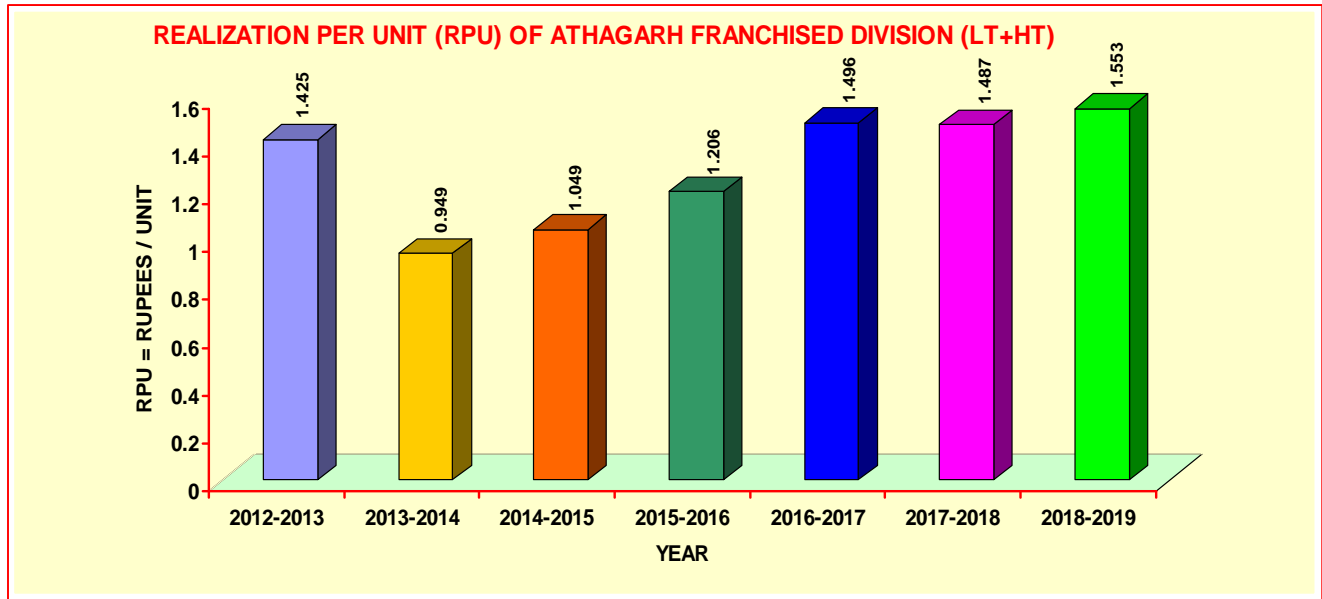
Year	LT+HT Distribution Loss in Percentage (%) = DL = 100-BE	LT+HT Aggregate Technical & Commercial Loss in Percentage (%) = AT & C = [1-(BE x CE/10000)] x 100
2012-2013	68.641 %	77.916 %
2013-2014	64.403 %	83.935 %
2014-2015	64.404 %	77.617 %
2015-2016	65.127 %	73.451 %
2016-2017	62.527 %	69.481 %
2017-2018	59.235 %	69.204 %
2018-2019	56.372 %	66.745 %
2019-2020	41.500 %	67.209 %

M/S M/S Riverside Utilities Private Limited (RUPL) - Cuttack, Athagarh and Salepur

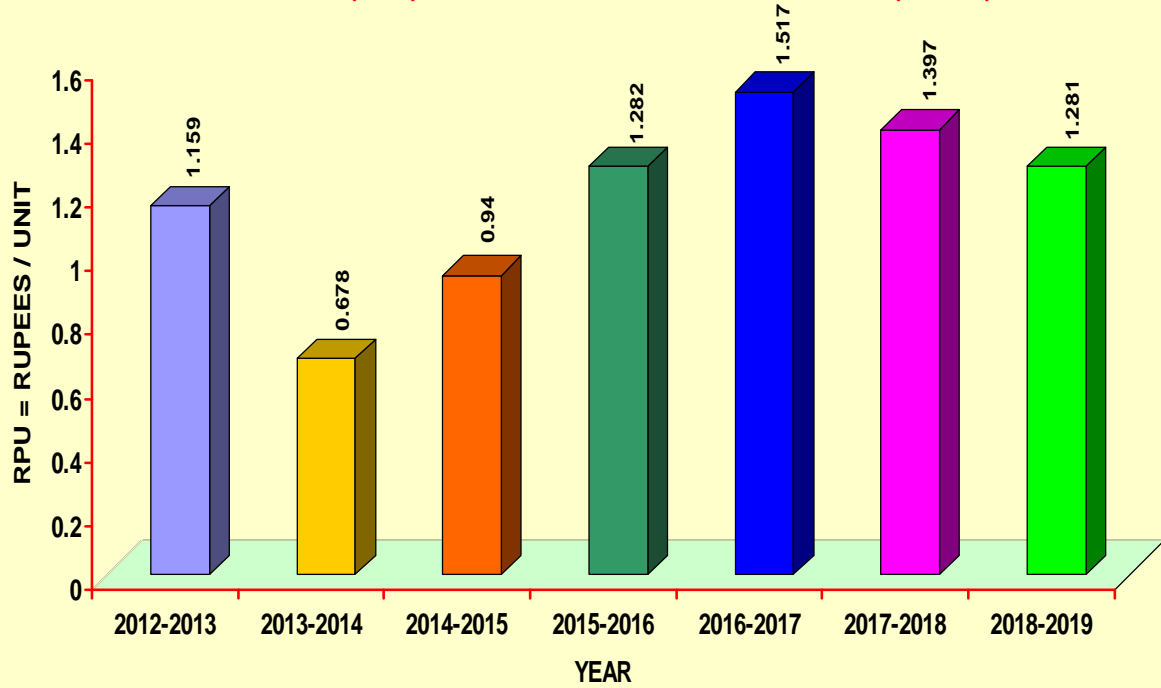
Year	Division	LT+HT Distribution Loss in Percentage (%) = $DL = \frac{100 - BE}{100} \times 100$	LT+HT Aggregate Technical & Commercial Loss in Percentage (%) = $AT \& C = [1 - (\frac{BE \times CE}{10000})] \times 100$
2012-2013	CED, Cuttack	57.135 %	63.337 %
2013-2014		52.428 %	59.099 %
2014-2015		55.305 %	65.191 %
2015-2016		53.434 %	59.403 %
2016-2017		51.166 %	55.817 %
2017-2018		46.292 %	55.676 %
2018-2019		45.138 %	54.271 %
2019-2020		36.606 %	57.026 %
2012-2013	AED, Athagarh	60.383 %	69.269 %
2013-2014		64.575 %	80.013 %
2014-2015		67.225 %	77.442 %
2015-2016		65.652 %	74.884 %
2016-2017		62.490 %	69.837 %
2017-2018		59.080 %	68.966 %
2018-2019		57.235 %	67.434 %
2019-2020		49.439 %	70.115 %
2012-2013	SED, Salepur	60.974 %	71.800 %
2013-2014		56.808 %	84.381 %
2014-2015		53.600 %	77.708 %
2015-2016		56.982 %	70.107 %
2016-2017		53.481 %	65.876 %
2017-2018		53.500 %	69.324 %
2018-2019		48.715 %	71.801 %
2019-2020		42.593 %	73.667 %

The Aggregate Technical and commercial losses of all four division not reduced as per DFA.

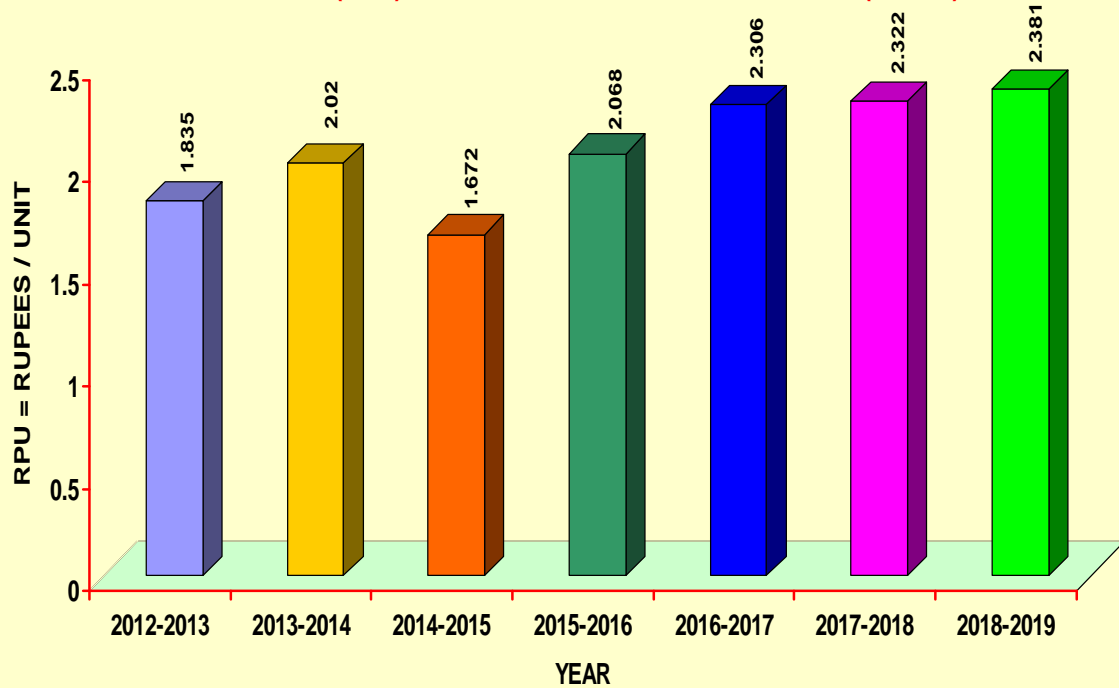
Division wise Realisation per unit



REALIZATION PER UNIT (RPU) OF SALEPUR FRANCHISED DIVISION (LT+HT)



REALIZATION PER UNIT (RPU) OF CUTTACK FRANCHISED DIVISION (LT+HT)



Comparative performance of Franchisee after Five years (Table-6)

Name of Division	AT&C(Before Franchisee)	AT&C (After Franchisee)	AT&C as per DF(After five years as per DFA)	Actual Reduction in AT&C
Salipur Division	72.35%	71.801%	15%	0.549%
Nimapada	72.20%	66.745%	15%	5.455%
Athagarh	71.61%	67.434%	15%	4.176%
Cuttack	61.03%	54.271%	15%	6.759%

It is observed that the franchisee has not performed as per the DFA. The collection efficiency as per Table-3 declined 3.84%, 6.63%,17.8%,2.12% as regards to Cuttack, Athagarh, Salipur, Nimapara. Similarly the AT&C Loss after five year should be 15%.The reduction in AT&C is very marginal and negligible.

Similarly billing efficiency as per Table-4 is not encouraging only10.172%, 8.465%, 13.295%, 8.138% with respect to Cuttack, Athagarh, Salipur, Nimapara Division. The realization per unit except Salipur division appears positive and possibility of further improvement.

Distribution Loss Comparative performance (Table-7)

Name of Division	Distribution loss (prior to franchisee)	Distribution loss (After franchisee)	Actual Reduction
Salipur	62.01%	48.715 %	13.295%
Nimapara	64.51%	56.372 %	8.138%
Athagarh	65.70%	57.235 %	8.465%
Cuttack	55.31%	45.138 %	10.172%

From the above we analyse that there is reduction of Distribution Loss of 13.295%, 8.138%, 8.465%, 10.172% in Salipur, Nimapara, Athagarh, Cuttack electrical division over a period of five years. But the decrease in Distribution loss is not as per Franchisee Agreement. The major reason for Distribution loss is due to improper billing, poor metering and unauthorized consumption not billed .The Franchisee in fact fail to increase the billing may be due to rampant theft of power due to hooking, bypassing of meter, caused by revenue loss and the performance not improved to the extent as agreed upon.

Conclusion

From the above analysis we conclude that collection efficiency declined in all four division after post franchisee operation as compared to base line parameter as outlined in Table (3) followed by slight increase in billing efficiency as per (Table-4),except four division which shows negative collection trend because as per franchisee agreement the Distribution franchisee must bring down the AT&C losses to 15%.As evident from(table-5) AT&C Loss increased significantly which indicates non performance of Franchisee operator and the financial health of utility

deteriorated over next five years. Both collection efficiency and billing efficiency not rise to the extent, Hence deployment of Franchisee operator and its work culture not yield better response as expected may be due to inexperience or and not able to transform the facts into reality. The basic reason of non performance by DF is due to poor administrative control, poor monitoring, ineffective enforcement drive followed by political interference, Capital investment not as per terms and condition of DF Agreement. Moreover a complete failure of handling resource and managerial skill. We should not discard the DF style of functioning rather must introspect the cause for deficiency in the procedural lapses in state of Odisha as it becomes successful in other state enabling substantial reduction of AT&C Losses. The Distribution Franchisee performance as regards to reduction of AT&C Loss after five year is far behind the target as agreed upon. The franchisee operator should adopt more strategic option to increase the billing and collection efficiency.

Suggestions and findings-From the above analysis we should suggest the following points in orderto maximize franchisee performance.

- Contract period should be extended by at least 15 years.
- Adjacent areas/divisions with appropriate consumer mix need to be provided to make the DF area commercially viable.
- Service delivery in adjacent areas should be provided to DF
- Scope of work of DF should be increased from 11kV line onwards for next 3 years and 33 kV line onwards after 3 years
- To bring improvement in reliability in the rural areas, specific fund should be allocated for O&M from incremental revenue so that consumer servicing is improved.
- Revenue sharing percentage per se across division should also be different based on the economic profile of the respective division
- Majority of capex under integrated capex plan (prepared before start of new DFA over contract period) to be carried out by Government. DF to carry out these work in absence of activities carried out by Government. CESU should compensate the DF for this through appropriate mechanism
- Implementation of Govt. Capex should only be through DF
- Remove the clause related to BST targets from the new agreement
- Unified supervision and control for operations in the DF area

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	Website: www.ijarm.com
	Subject: Economics
Quick Response Code	
DOI: 10.22192/ijamr.2020.07.10.001	

How to cite this article:

Suresh Chandra Nanda. (2020). Distribution franchisee not a sustainable tool for reducing AT & C loss. Int. J. Adv. Multidiscip. Res. 7(10): 1-113.
DOI: <http://dx.doi.org/10.22192/ijamr.2020.07.10.001>