

WHAT OILS THE WHEEL OF ELECTRICITY THEFT- PERSPECTIVE OF INDIAN DISCOMS

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ABSTRACT

Electricity thefts in connivance with employees of electricity distribution companies, remain the Achille's heel of power sector, addressing which continue to be the holy grail. The lackluster performance of technological measures to curb electricity thefts highlights the need to investigate the human aspects too. That's what this study aims at. The findings, grounded in the responses of the nineteen employees of the Indian electricity distribution companies, detail the factors that induce employees to collude with consumers in electricity theft.

Keywords: Power distribution companies, Commercial losses, Electricity theft, Non-technical reasons for electricity theft, Theft in connivance with employees

1. INTRODUCTION

The Aggregate Technical and Commercial (AT&C) losses remain the Achille's heel of the power sector, worldwide. The losses pose enormous challenge for emerging economies. In India, the AT&C losses equivalent to 1.5% of GDP (CEA, 2014) have long been perceived unsustainable (Bhattacharya & Patel, 2011). A concern which is echoed by the Ujjwal DISCOM Assurance Yojna (UDAY) portal data as well. As per the data, the average AT&C losses for the participating states stand at 24.41% instead of targeted 15% (Chakraborty & Kaur, 2018). This loss percentage looks bad when compared to the other emerging economies such as Brazil, Indonesia and China (World Development Indicators, 2012). The high loss percentage is worrisome because it eventually leads to increase in tariffs and decrease in quality (Smith, 2004).

1.1 Electricity Theft fuels AT&C Losses

The commercial losses in India, primarily attributable to electricity thefts (Atmanand, 2014; Kalsi, 2012, Rakhra, 2013, Sreenivasan, 2014) drive the AT&C losses (Joseph, 2010) and contribute 80% to the total (GOI, 2006). Electricity theft constitutes 20-25% of the generated power in India (Smith, 2004) and combating it continues to be the holy grail. The sector painfully witnesses electricity worth billions of dollars stolen every year. India loses INR 20000 crores per annum to electricity theft (Kalsi R. , 2012). The magnitude of the loss compelled India to adopt many technological measures like High Voltage Distribution System (Sreenivasan, 2014), Aerial Bundled Cables, , Underground Cabling System (CEA, Ministry of Power, GoI, 2018), Advanced Metering Infrastructure Smart Metering (Sardar, & Ahmad, 2015), Feeder Segregation and Metering (Ram, 2018).

1.2 Electricity Theft- Relying on Technology not enough

The technical measures unfortunately could not live up to the promised potential. The unscrupulous people keep devising innovative means to counter any state-of-the-art anti-tampering features in metering system (Sreenivasan, 2014). This perhaps explains the uptrend in electricity theft in an era of technology (Smith, 2004) and increase in meter tampering despite development of foolproof high-end meters in the emerging smart grid scenario (Sreenivasan, 2014). The lackluster performance of the Restructured Accelerated Power Development and Reform Program (RAPDRP) bears testimony to the fact that technological means alone are not enough to nail the menace of electricity theft (Pargal & Ghosh Banerjee, 2014). The Haryana and West Bengal examples demonstrates how the automatic

meters fall into disuse until transformation in the capacity and attitude of ground staff is brought about (Shah, 2012). The UDAY too could not sustain the initial momentum and met with the same fate. The data of the 24 participating states shows a weak and insignificant correlation between the AT&C losses and the implemented the UDAY initiatives like smart meter and feeder metering (Kaur & Chakraborty, 2018). Still, the DISCOMS obscure the problem to push for politically convenient technical solutions (Gulati M. &, 2007). It must be realized that it is the interaction of social and technical factors that brings success (Shah, 2012). Though there exists a vast literature on nontechnical and social determinants of electricity theft; its employee-theft aspect is not much explored.

Given the fact that electricity theft in collusion with employees constitute the dominant form of commercial theft (Agarwal, 2003), exploring its employee connect becomes more important.

1.3 Electricity Theft- The Employee Connect

A dishonest consumer either steals electricity directly or colludes with DISCOM employees for overdue consumption of electricity by paying bribes (Jamil & Ahmad, 2014). There are many billing irregularities that can be attributed to corruption (Madhav & Mehta, 2013). Such practices are more pronounced in African and Asian countries (Depuru & Devabhaktuni, 2011), where corruption and bribery till a fertile ground for theft (Lewis, 2015; Gaur & Gupta, 2016; Jamil & Ahmad, 2019) and top-executives to lower-staff irrigate it (Smith, 2004). It's not a wonder that electricity thefts happen in collusion with employees of DISCOMs (Sreenivasan, 2014). By the virtue of their roles, staff engages extensively with consumers in residences, offices, factories etc., thus have many 'street level' decision making chances (Lipsky, 1980). They exercise discretion in deciding- to whom, when and for how much the power connections be given (Smith, 2004), -revising bills, -replacing or not replacing defective meters (Gulati M. &, 2007), -recording lower meter readings, -fixing the meters, -allowing rigging of electricity lines for money (Smith, 2004; Gulati, 2007).

2. LOOKING AT ELECTRICITY THEFT THROUGH THE LENSE OF EMPLOYEE THEFT

These aforementioned studies provide enough information to presume that electricity theft in collusion with DISCOM employees is equivalent to employee theft, which in the words of (Greenberg, 1990) is "any unauthorized appropriation of company property by

employees either for one's use or for sale to another. It includes, but not limited to, the removal of products, supplies, materials, funds, data, information, or intellectual property". Therefore, to be able to design an effective electricity theft combat intervention, it's important, first, to have a good understanding of the determinants and dynamics of employee theft, second, to identify the factors and conceptualize how they induce DISCOM employees to collude with consumers in electricity theft. This paper explores the first part reports the factors that induce DISCOM employees to collude with consumers in electricity theft.

3. MATERIAL AND METHOD

3.1 Research Methodology

Grounded Theory Method (GTM), one of the qualitative methodologies, enables an answer to socially purposeful questions (Douglas, 2004)- *What (factors) leads to electricity theft in collusion with employees in DISCOM*, conceptualization (Patton, 2002)- *How various factors induce employees to collude with consumers to steal electricity*, a fresh perspective on existing phenomena (Goulding, 1999)- *Looking at electricity theft through the lens of employee theft*. As per Goulding (2002), GTM aids an explanation of behavior, advancement of a theory and provides a perspective on behavior, which coincides with the objectives of this study, hence GTM was found to be the most appropriate methodology.

3.2 GTM Process

Mentioned below is the process flow used in this study, as suggested by Charmaz (2006):
Getting general disciplinary perspective--- Sensitizing concept--- research problem and opening research questions--- Data collection and initial coding- initial memos, and raising codes to tentative subcategories and categories--- Data collection and focused coding--- Advanced memos and refining conceptual categories--- Theoretical sampling and seeking specific new data--- Raising certain categories as theoretical concepts--- Sorting memos and diagramming concepts--- Theoretical sampling if needed--- Writing the draft.

3.3 Literature Review and the Sensitizing Concept

Literature review in GTM is delayed traditionally until the analysis is over, mainly for avoiding data contamination and importing preconceived ideas (Charmaz, 2006; Glaser & Strauss, 1967). On the other hand, it is encouraged by contemporary grounded theorists, for they feel that nobody is a clean slate

(Eisenhardt, 2002). Since, literature review helps in contextualizing the study (McCann & Clark, 2003), developing 'sensitizing concepts' and gaining theoretical sensitivity (McCann & Clark, 2003; Strauss & Corbin, 1998), this study reviewed the extant literature on employee thefts broadly.

Literature review on Employee theft

Greenberg and Tomlinson (2004) noted five major perspectives on the reasons for employee theft- clinical psychologists, industrial psychologists, criminologists, specialists in workplace security and organizational scientists. Each orientation contributes somewhat to the understanding of employee theft, but none paints the picture complete (Greenberg, 1998). Therefore, it is imperative that all the approaches are integrated for gaining a complete understanding of employee theft and developing an effective electricity theft combat mechanism. The authors of this paper read major widely accepted perspectives (mentioned below) on employee theft and proposed an integrated conceptual framework (Sharma et al., 2016)

Perspectives	Representative work	Features
Clinical Psychology	Person based theories	Hold need, deviant individual background, moral laxity, greed/temptation responsible for theft.
Psychology	Theory of planned behavior	Maintains that intentions to perform behavior (theft) can be predicted from three factors- attitudes toward behavior, subjective norms and perceived control over behavior.
Sociology	Theory of differential association	Says that criminal values, motives, beliefs, behaviors and techniques are learned through interactions within intimate personal groups in a process of communication. It stresses that crime is rooted in normative conflict.
Criminology	Fraud triangle	States that theft occurs only when pressure, rationalization and opportunity are essentially present.
Criminology	General theory of crime	States that low self-control is the primary individual characteristic that causes criminal behavior
Organizational Science/Industrial Security	Organizational factors	Hold perceived organizational support, organizational culture and climate, leadership, deterrence, internal control, organizational justice and inequity, job dissatisfaction, organizational structure and normalization responsible for deviant behaviors including theft.

Source Sharma et al., 2016

Sensitizing Concept

This study has used the aforesaid framework by the authors as a sensitizing concept. The sensitizing concept in GTM act as a:

- starting point (Patton, 2002; Blaikie, 2000)
- tool for gaining theoretical sensitivity
- framing a few initial interview questions

All the above is true for this study too.

3.4 Setting, Sample and Sampling

The study considered access, resource availability, research goals, time schedule and energy (Corbin & Strauss, 2008), pragmatism and the AT&C loss percentage to zero in on the setting for this study. The sample of this study constituted the DISCOM employees, who were believed to have knowledge of the phenomenon by way of circumstantial evidence. In GTM, the sample size is determined by theoretical sampling achieved through constant comparison of emerging categories. Glaser (1998, 1992) argued that sampling must continue until the categories are saturated. In all, this study drew nineteen samples from six cities of two Indian states, by way of purposive and snowball sampling initially and later theoretical.

3.5 Data Collection and Data Analysis

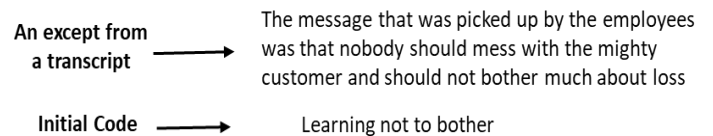
The matter under study was sensitive and complex, and the data sought was dense and detailed, hence in-depth interviews (Ritche & Lewis, 2003) were carried out and kept unstructured (Corbin & Strauss, 2008). The initial few questions of the interviews were inspired by the sensitizing concept, but not their phrasing. The focus of inquiry got evolved with each interview as advised by Patton (1990).

The process of data analysis began while the data were being collected. The interview transcripts were analyzed using constant comparison and coding, which was aided by a qualitative data analysis software Atliis.ti. The software helped in coding, linking codes and text segments, creating memos, searching, revising and reorganizing. It also helped in visual display of data and findings (Creswell, 2007).

In GTM, coding occurs in stages:

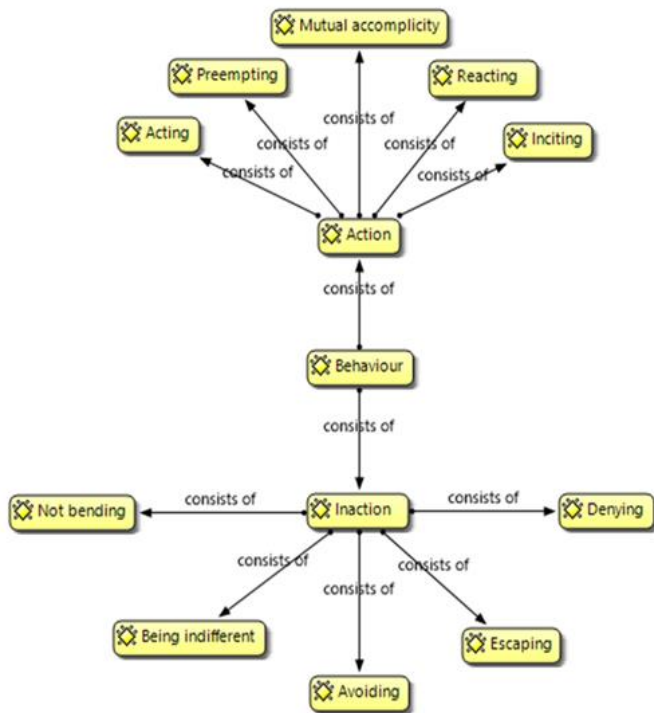
- Initial
- focused and
- theoretical coding (Charmaz, 2006).

In the initial coding, of this study, several codes were generated. Attempt was made to stay as close to the data as possible and use gerund, as shown below:



The initial codes were merged and elevated to the level of subcategories/categories. In focused coding, the important and significant conceptual categories were refined.

Shown below is the example of coding- Codes - Categories – Concept



Constant comparison at each stage of the analysis facilitated comparison of data with codes and categories to develop and refine the focused codes (Charmaz, 2006). In theoretical coding, possible relationships among the final concepts were specified. Memos remained part and parcel of the study throughout, they answered questions that data threw and the suggested the course of action for data collection.

4. RESULTS AND DISCUSSION

Complete coding of the transcripts lead to emergence of major five factors associated with electricity theft namely Opportunity, Constraint, Normalized Connivance, Affect and Behavior, as shown in the table to follow.

Opportunity- Diminished organizational control, leadership, culture, systems and personal constraints collectively create a laxity in the system, which gives employees an impression that they can get away with colluding for theft without being harmed.

Participant’s quote- “What is missing here is the lack of deterrence. There has been an instance, where termination of the employees was compulsory, but he was let go with only an increment stoppage.”

Constraints- Employees feel pressured by the people and situations within or outside DISCOM, and compulsive personal aspirations to connive or turn a blind eye to connivance. *Participant’s quote-* “If you book

your staff for theft, how will the work happen with a limited few?”

Concepts	Categories	Subcategories	
Opportunity	Diminished Organizational Control	Outsourcing	
		Self-sourcing	
		Intruding	
	Organizational Leadership	Lack of Commitment	
		Lack of Competence	
	Organizational Culture	Not having core values	
		Lack of business orientation	
		Lack of performance orientation	
		Lack of ownership	
	Organizational Systems	Opportunism and convenience	
Outdated HR Practices			
Personal Constraints	Outdated Technology		
	Lack of Motivation		
Constraints	Environmental Constraints	Lack of Deterrence	
		Constrained by Politicians	
		Constrained by Govt Authorities	
	Organizational Constraints	Constrained by Customers	
		Shortage of Manpower	
		Constrained by Internal Authorities	
	Personal Constraints	Constrained by Unions	
		Lifestyle	
		Economic Pressure	
		Greed	
Normalized Connivance	Institutionalization	Not considering connivance a crime	
		Exhibiting audacious impudence	
		Having consensus fallacy of legitimacy	
	Rationalization	Justifying connivance	
		Denying harm	
	Social Learning	Drawing comparison	
		Having precedence	
Affect	Learning by observing		
	Inheriting attitude		
Behavior	Feelings	Feelings	
		Fearing Consequences	
	Action	Not Fearing Consequences	
		Mutual accomplicity	
		Preempting	
		Reacting	
		Inciting	
		Acting	
		Inaction	Denying
			Escaping
			Avoiding
			Being indifferent
			Not bending rules

Normalized Connivance- Colluding with consumers in theft is seen as an acceptable and a just practice. Employees rationalize it, social learning spreads it, and eventually it gets institutionalized. Participant’s quotes

Institutionalization - “...So stealing is not considered wrong. It is more of an accepted phenomenon – it works like this only.”

Social learning- “Employees inherit such attitude from senior employees. At the time of joining, they are innocent, but soon after joining they start looking for field posting where they could earn extra money.”

Rationalization- “...electricity is Government’s property; it is not individual’s money, so stealing is not considered wrong.”

Affect- At workplace, employees experience different kinds of feelings, which may or may not be

coupled with fear. Participant's quote- "It feels bad; it feels as if people are making a fool of you. There is a feeling that you are not getting what you should."

"I tried improving things there myself but, then I started receiving a lot of threats. I got worried."

Behavior-It comprises of action and inaction. The action includes engaging in various activities related to theft, and inaction includes abstaining from reporting theft.

Participant's quotes- "People look for additional ways and means to earn money as a reaction."

"...but soon after joining they start looking for field posting where they could earn extra money."

"Nobody complains about electricity theft directly, because they don't want to be secluded by others. You see peer pressure is of great importance, which is inexistence" Depicted in the figure below is the Qualitative Associative Network of 'Behavior' (Theft).

Quality of Study

GTM studies are assessed for quality on their credibility, originality, resonance and usefulness (Charmaz, 2006), rather than objectivity and validity. This study carefully gathered and systematically analyzed adequate data carrying multiple perspectives. It provided newer insights corroborated by experts, which may be helpful in developing effective electricity theft combat mechanism.

5. CONCLUSION

The study threw a spotlight on a less explored human angle to electricity theft and brought to surface many factors that induce employees to collude with consumers in electricity thefts, many of which are related to the way people, processes and practices are managed. The study can be extended to conceptualize how these factors induce connivance and suggest a theoretical framework which can be empirically tested.

References

Atmanand, D. (2014, September 4). *Financial management of distribution of power*. Retrieved May 12, 2019, from <http://www.ptcindia.com/common/ptchronicle-april2013.pdf>.

Bhattacharya, S., & Patel, U. R. (2011). *Does the exuberance in the Indian power sector have legs?* Washington, DC : Global Economy and Development at Brookings.

Blaikie, N. W. (2000). *Designing social research: The logic of anticipation*. . Cambridge, UK: Polity.

CEA, Ministry of Power, GoI (2014, January). *Reports*. Retrieved September 2, 2018, from

http://cea.nic.in/reports/monthly/executive_rep/jan14.pdf.

CEA, Ministry of Power, GoI. (2018, June). *Reports*. Retrieved July 5, 2019, from Central Electricity Authority: http://www.cea.nic.in/reports/others/god/dpd/guidelines_dtt.pdf

Chakraborty, K., & Kaur, A. (2018, November 16). *Are DISCOMS unsustainable? UDAY Portal Data shows the average AT&C Losses at 25.41%*. Retrieved from <https://www.financialexpress.com/https://www.financialexpress.com/opinion/are-discoms-unsustainable-uday-portal-data-shows-the-average-atc-losses-at-25-41/1383184/>

Charmaz, K. (2006). *Constructing Grounded Theory*. . California: Sage Publications.

Corbin, J., & Strauss, A. (2008). *Basics of Qualitative Research- Techniques and Procedures for Developing Grounded Theory* (Vol. 9). California: Sage Publications.

Creswell, J. (2007). *Qualitative inquiry and research design: Choosing among five approaches*, 2nd ed.

Depuru, S. W., & Devabhaktuni, V. (2011). Electricity theft: Overview, issues, prevention and a smart meter based approach to control theft. *Energy Policy*, 1007-1015.

Douglas, D. (2004). *Entrepreneurship Research and Grounded Theory – Some Methodological Reflections*. 3rd European Conference on Research Methods in Business and Management. . Reading University, UK.

Eisenhardt, K. (2002). Building theories from case. In M. H. Miles, *The qualitative researcher's companion* (pp. 5-36). CA.

Gaur, V., & Gupta, E. (2016). The determinants of electricity theft: An empirical analysis of Indian states. *Energy Policy*, 127-136.

Glaser, B. (1992). *Basics of grounded theory analysis: Emergence vs forcing*. CA: Mill Valley, Sociology Press.

Glaser, B. (1998). *Doing grounded theory: Issues and discussions*. CA: Mill Valley, Sociology Press.

GOI. (2006). *Segregation between technical and commercial losses*. Delhi.

Goulding, C. (1999). *Grounded Theory: some reflections on paradigm. procedures and misconceptions*. Working Paper Series-University of Wolverhampton Management Research Centre.

Goulding, C. (2002). *Grounded theory: A practical guide for management, business and market researchers*. Thousand Oaks CA: Sage Publications.

Greenberg, J. (1990). Employee theft as a reaction to underpayment inequity: The hidden cost of paycuts. *Journal of Applied Psychology*(75), 561-568.

Greenberg, J. (1998). The cognitive geometry of employee theft: Negotiating "the line" between taking and stealing Dysfunctional Behavior in Organizations. 147-193.

Greenberg, J., & Tomlinson, E. C. (2004). The methodological evolution of employee theft research. *The Dark Side of Organizational Behavior.*, 426-421.

- Gulati, M., & Rao, M. Y. (2007). Corruption in the Electricity Sector- A Pervasive Scourge. In J. E. Campos, & S. Pradhan, *Many Faces of Corruption- Tracking Vulnerabilities at Sector Level* (pp. 115-157). Washington DC: World Bank.
- Jamil, F., & Ahmad, E. (2014). An Empirical Study of Electricity Theft from Electricity Distribution Companies in Pakistan. *The Pakistan Development Review*, 239-254.
- Jamil, F., & Ahmad, E. (2019). Policy considerations for limiting electricity theft in the developing countries. *Energy Policy*, 452-458.
- Joseph, K. (2010). The politics of power : electricity reform in India. *Energy Policy*, 38(1), 503-511.
- Kalsi, R. (2012, July). *The Burden Brunt by State Discoms from PTC India*. Retrieved October 30, 2018, from <http://www.ptcindia.com/common/ptchronicle-july2012.pdf>.
- Kaur, A., & Chakraborty, L. (2018, November 22). UDAY Power Debt in Retrospect and Prospects: Analyzing the Efficiency Parameters. *NIPFP Working Paper Series*. New Delhi, India: National Institute of Public Finance and Policy .
- Lewis, F. B. (2015). Costly 'Throw-Ups': Electricity Theft and Power Disruptions. *The Electricity Journal*, 555-564.
- Lipsky, M. (1980). *Dilemmas of the Individual in Public Services*. New York City: Russell Sage Foundation,.
- M. Agarwal, I. A. (2003). *The Delhi electricity discom privatizations: Some observations and recommendations for future privatizations in India and elsewhere*. Washington DC: World Bank.
- Madhav, M., & Mehta, S. (2013). Case of Reforms in the Indian Power Distribution Sector: A Move Towards Eradicating Energy Poverty. *World Energy Congress*.
- McCann, T. V., & Clar, E. (2003). A grounded theory study of the role that nurses play in increasing clients' willingness to access community mental health services. *International Journal of Mental Health Nursing*, 279-287.
- Pargal, S., & Ghosh Banerjee, S. (2014). *More Power to India: The Challenge of Electricity Distribution. Directions in Development*. Washington DC: The World Bank.
- Patton, M. (1990). *Qualitative evaluation and research methods*. Beverly Hills: Sage .
- Patton, M. (2002). *Qualitative Research and Evaluation Methods (3rd ed.)*. CA: Sage.: Thousand Oaks,.
- Rakhra, G. S. (2013). *Analysis of commercial & administrative losses in radial distribution system*. Retrieved January 2014, from <http://www.academicresearchjournals.com/serialjournalmanager/pdf/1364626936.pdf>.
- Ram, B. (2018, November 2). *CAG*. Retrieved July 5, 2019, from Blog- Power Theft: <https://www.cag.org.in/blogs/power-theft>
- Ritche, J., & Lewis, J. (2003). *Qualitative Research Practice: A Guide for Social Science Students and Researchers*. New Delhi: Sage.
- Sardar, Sana & Ahmad, Sanauallah. (2015). Detecting and Minimizing Electricity Theft: A Review. *JOURNAL OF EMERGING TRENDS IN APPLIED ENGINEERING*. 1.
- Shah, T. M. (2012). *Organizational Reform in Gujarat's Electricity Utility. Anand: IWMI-Tata Program*. Retrieved March 6, 2013, from www.iwmi.cgiar.org/iwmi-tata/PDFs/2012_Highlight-06.pdf.
- Sharma, T., Pandey, K. K., Punia, D. K., & Rao, J. (2016). Of Pilferers and Poachers- Combating Electricity Theft in India. *Energy Research and Social Science*, 40-52.
- Smith, T. (2004). Electricity theft: a comparative analysis. *Energy Policy*, 32(18), 2067-2076.
- Sreenivasan, G. (2014). *Power Theft*. Delhi: PHI Learning Pvt Ltd.,.
- World Development Indicators. (2012, July 12). *WDI*. Retrieved May 2019, 18, from <http://databank.worldbank.org/ddp/home.do?Step=12&id=4&CNO=2>.