



TATA POWER-DDL

TATA POWER DELHI DISTRIBUTION LIMITED

A Tata Power and Delhi Government Joint Venture

“READING THROUGH ARTIFICIAL INTELLIGENCE”

with you *Non-Stop*

ABOUT TATA POWER DELHI DISTRIBUTION LIMITED



“To be the most trusted and admired provider of reliable, competitive power and services, and be the company of choice for all stakeholders”



License Area: North and North West Delhi
(510 sq. km)

License Period : 25 years



51:49 Joint Venture
of The Tata Power Company Limited
(Tata Power)
and
the Government of Delhi
Formed on 1st July 2002
in



TATA Power-DDL is an ISO 9001(QMS), 14001(EMS), 18001(OHSAS), 27001(ISMS), 8000(SA) and 50001 (EnMS) certified organization.

Overview of Distribution Utility Business

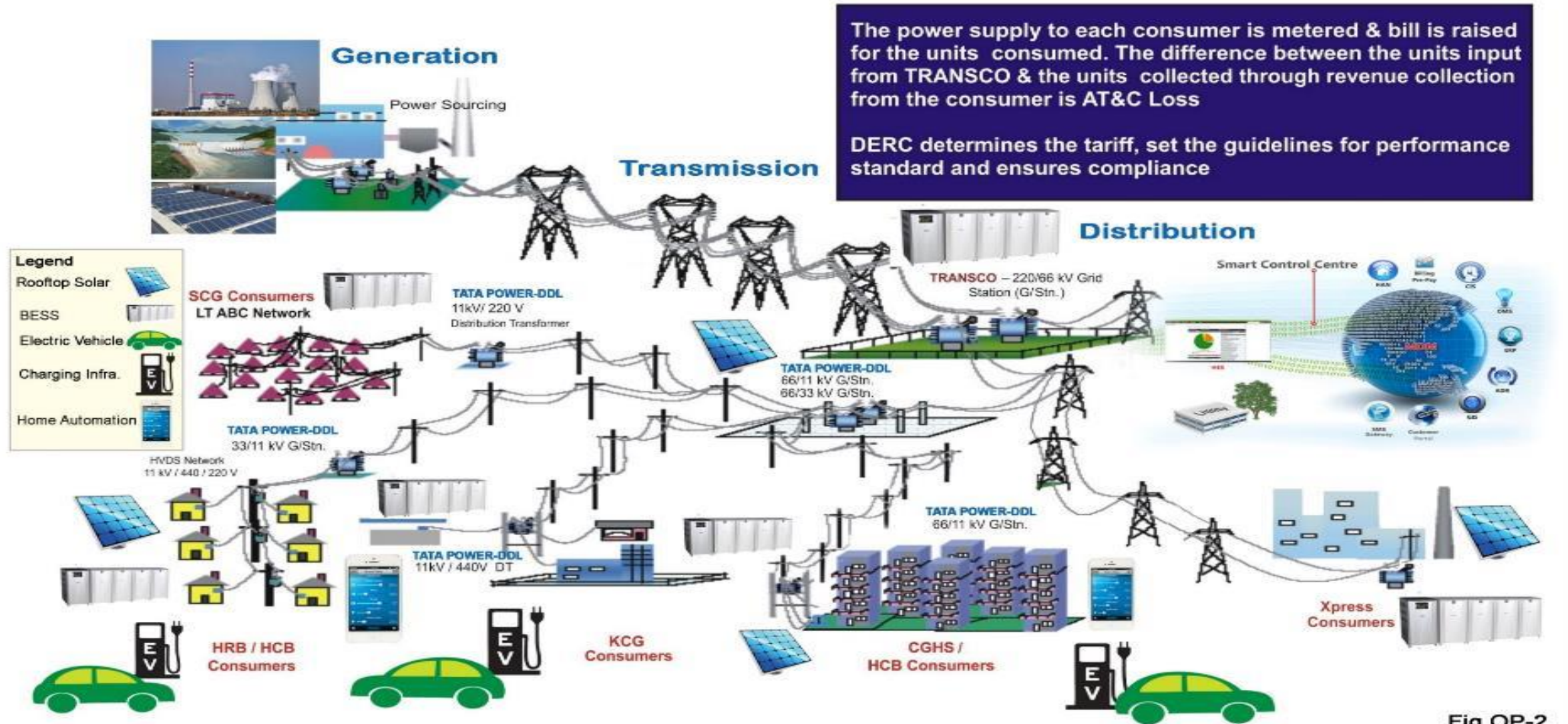
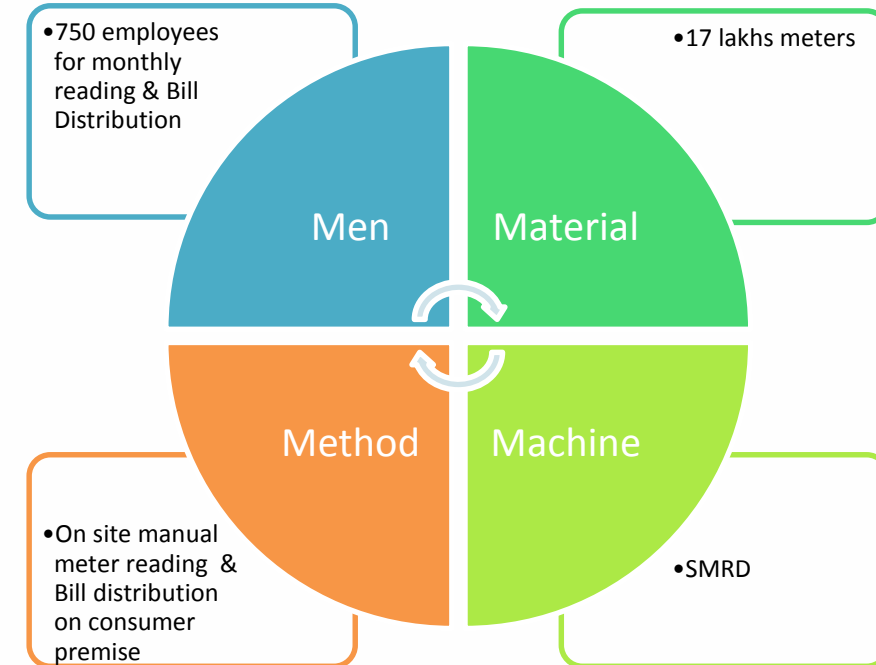
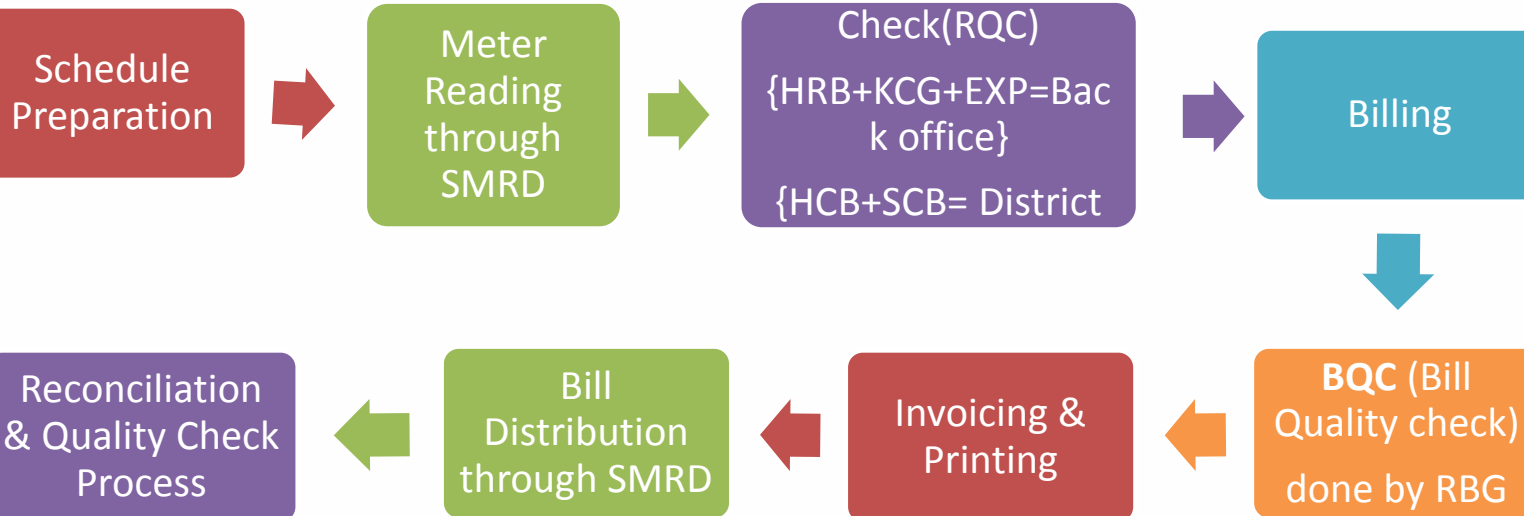


Fig OP-2

Overview of Meter Reading Group

30-35 days billing of HCB,SCB,HRB,KCG & EXP
segment[Approx. 17 lacs cases]



Team Composition

Name	Organization
Mr. Subhadip Raychaudhuri	TATA POWER DDL
Mr. Nitin Mithrani	TATA POWER DDL
Mr. Nikunj Gupta	TATA POWER DDL
Mr. Deepak Bhardwaj	TATA POWER DDL
Mr. Vishal Gupta	TATA POWER DDL
Mrs. Manisha Mehra	TATA POWER DDL
Voja Jovanovic	TCOM Ltd Company
Miodrag Ivanovic	TCOM Ltd Company
Jovan Marjanovic	TCOM Ltd Company
Nikola Rankic	TCOM Ltd Company
Dejan Todorovic	TCOM Ltd Company
Arnav Saraf	FACOR Group
Ompal Yadav	FACOR Group

Abbreviation used

S.no	Abbreviation	Full Form
1	AI	Artificial Intelligence
2	TNC	Total No Of Consumers
3	MR	Meter Reader
4	MMG	Meter Management Group
5	OCR	Optical Character Recognition

Problem Definition

Incorrect Meter Readings

IMPACT

Increased Reading complaints resulting in consumer dissatisfaction

Reading Accumulation

IMPACT

Revenue Leakage

No 100% Photographic Evidence

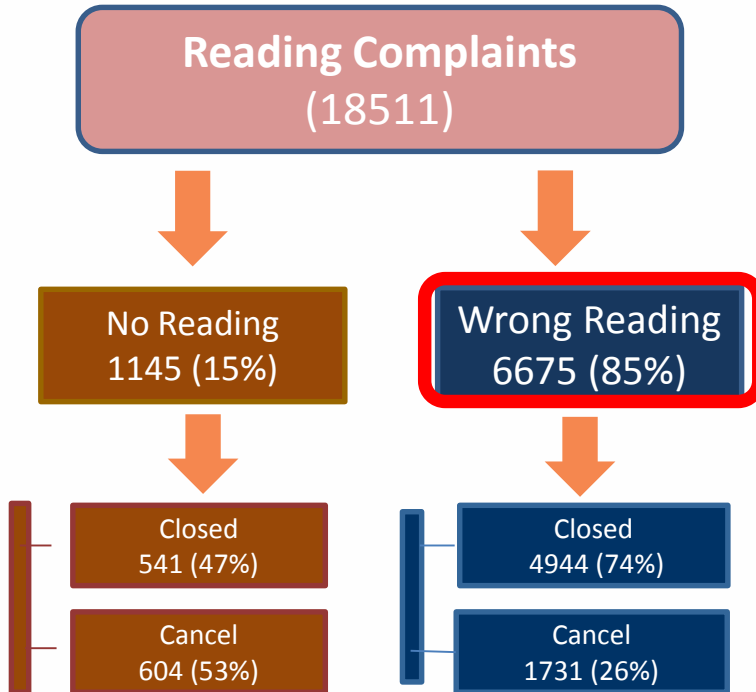
IMPACT

No Identification of Theft, Delay in Billing

Steps	Description	May.18								
		2-May	4-May	9-May	11-May	16-May	18-May	23-May	25-May	30-May
1	Define Problem									
2	Observe									
3	Analysis									
4	CounterMeasures (PLAN)									
5	Kaizens (DO)									
6	Confirm Results (Check & Act)									
7	Standardization & YOKOTEN									



Analyse the Problem

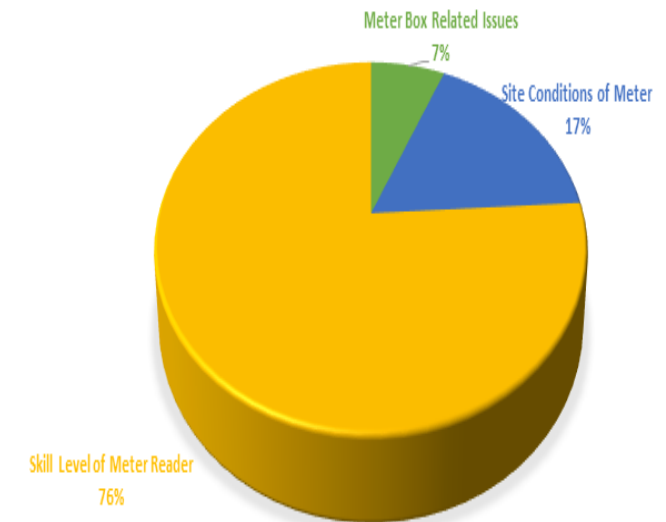


Stratification of PA complaints		
Category	Total	%
Skill Level of Meter Reader	161	76%
Site Conditions of Meter	37	17%
Meter Box Related Issues	14	7%
total	212	100%

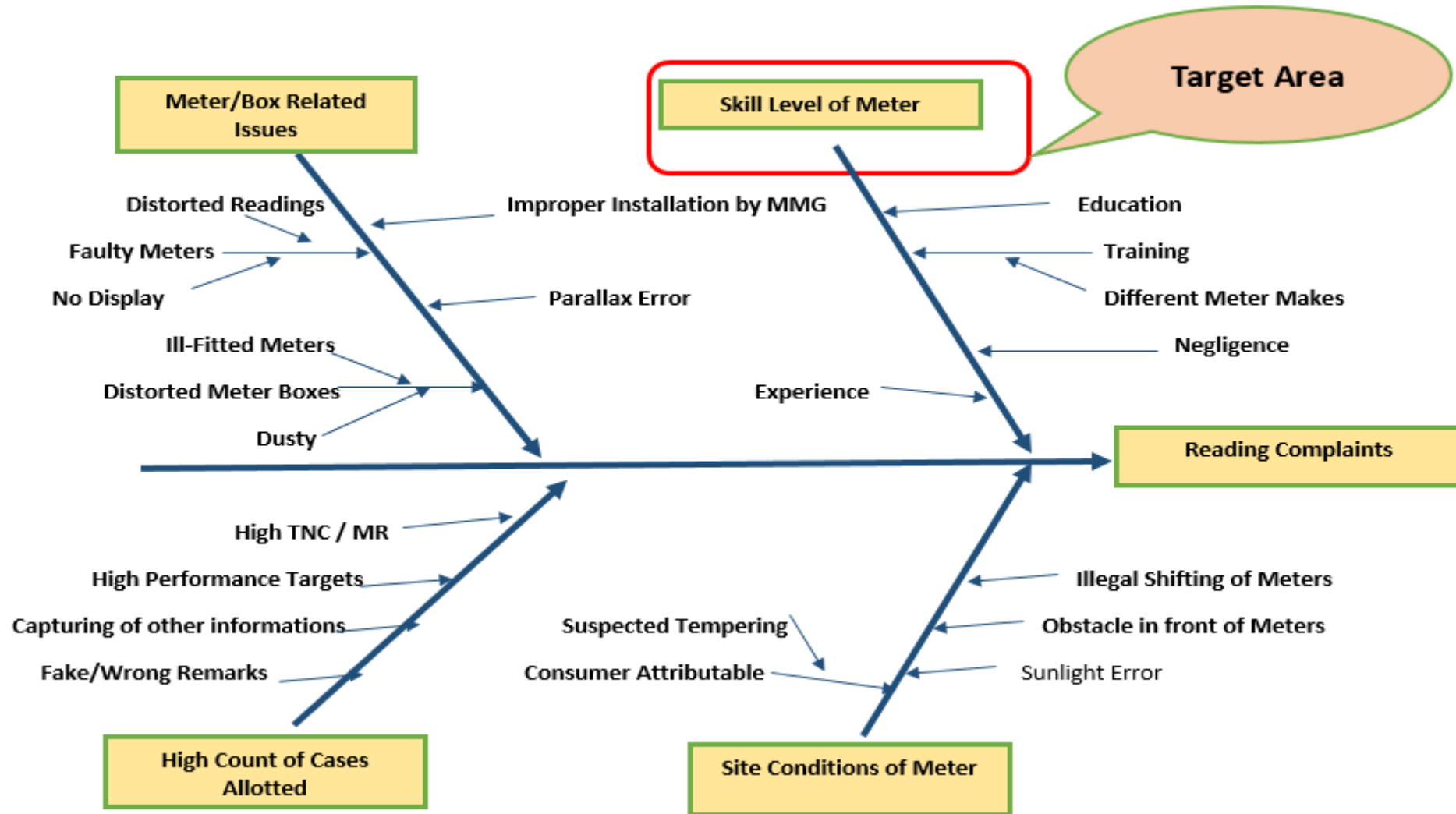
Lack of Experience	7%
Punching Error by Meter Reader	69%

Complaint Status	Cancelled	Closed	Total Complaints	TnC	Closed Complaints/1000 Consumers
Apr	109	169	278	1641487	0.1
May	151	313	464	1646379	0.19
Jun	247	370	617	1652776	0.22
Jul	276	492	768	1658171	0.3
Aug	263	588	851	1664057	0.35
Sep	246	646	892	1668347	0.39
Oct	213	785	998	1670822	0.47
Nov	157	502	659	1675933	0.3
Dec	138	419	557	1680119	0.25
Jan	169	372	541	1684402	0.22
Feb	183	387	570	1688561	0.23
Mar	183	442	625	1693095	0.26

REASON ANALYSIS OF COMPLAINTS



Identification of Possible Causes



Punching Mistake by Meter Readers on Site

From: BA RHN2
Sent: 03 November 2019 14:45
To: NHCL Delhi; Virender Kumar Kundu (MMG)
Cc: BA RHN1; BA BRIJ LAL YADAV; Nikunj Gupta; Manisha Mehra; BA RHN4
Subject: RE: Wrong punching in base 24.10.2019.....

Dear Sir/Madam,

Please find by mistake wrong punching in SMRD case please add & update correct RMK .

PHOTO PATH :- <\\rhn-nhcl-babloo\PHOTO BACK UP\PHOTO MR\PHOTO NOV 2019 MR\03..11.2019>

INSTALLATION_NO	SERIAL_NO	MR_DATE	MR_REC	REGISTER	NOTE	MR_ID
5000227955	10065275	03.11.2019	8809	KWH	OK	728
5000227955	10065275	03.11.2019	6.52	KW	OK	728
5000752067	10052312	03.11.2019	11826	KWH	OK	279
5000752067	10052312	03.11.2019	5.83	KW	OK	279
5000964709	10063593	03.11.2019	841	KWH	OK	279
5000964709	10063593	03.11.2019	9.46	KW	OK	279
5001079452	10101755	03.11.2019	922	KWH	OK	728
5001079452	10101755	03.11.2019	3.52	KW	OK	728

From: BA BWN1
Sent: 06 September 2019 20:00
To: Kunal Sharma
Cc: Rakesh Kr Sharma; BWN3; BWN2; BA NHCL Delhi; Manisha Mehra; Nikunj Gupta; Nitin Mithrani
Subject: RE: Reading Correction SMRD 2.0

Dear Sir,
Please find the data for reading correction in which wrong reading has been punched by MRs.

S. NO.	Portion	Contract Acc	Installation	Meter No	KWH	KW	RMK	MR NAME	MR ID
1	BW13D	60024295408	5000932246	SS12199542	10090	4.89	OK	SHIVOM	T31
2	BW13B	60000936942	5000068868	223798	21924	1	OK	MANOJ T	427
3	BW13D	60018304786	5001752394	44282683	6374	1.11	OK	RAJESH JHA	T27

Identification of Root Cause – Why Why Analysis



TNC
FIXATION

Why

- Customer Dissatisfaction

Why

- Increased Reading Complaints

Why

- Incorrect Meter Reading

Why

- Punching Error

Why

- Count of TNC allocated is high

District	Portion	TNC	CURRENT SMRD	AVG TNC	PROPOSED SMRD	AVG TNC
SN	SN14A	1957	7	279	9	219
SN	SN14C	1974	7	279	9	221
SN	SN14D	2282	8	283	10	227
SN	SN15A	2527	9	278	11	228
SN	SN15B	1951	7	270	9	212
SN	SN17E	1923	7	270	9	211
SN	SN18A	1762	6	288	8	216
SN	SN18B	2215	8	274	10	223
SN	SN18C	1724	6	283	8	212
SN	SN18E	1785	6	294	8	221
BD	BD11D	5180	13	380	16	309
BD	BD11E	3158	13	236	15	204
BD	BD12E	4481	17	255	19	232
BD	BD13D	5387	18	291	21	252
BD	BD16E	4939	13	331	18	251
BD	BD18E	3191	13	235	15	204
MP	MP11A	6503	24	257	26	238
MP	MP11B	8773	32	263	34	248



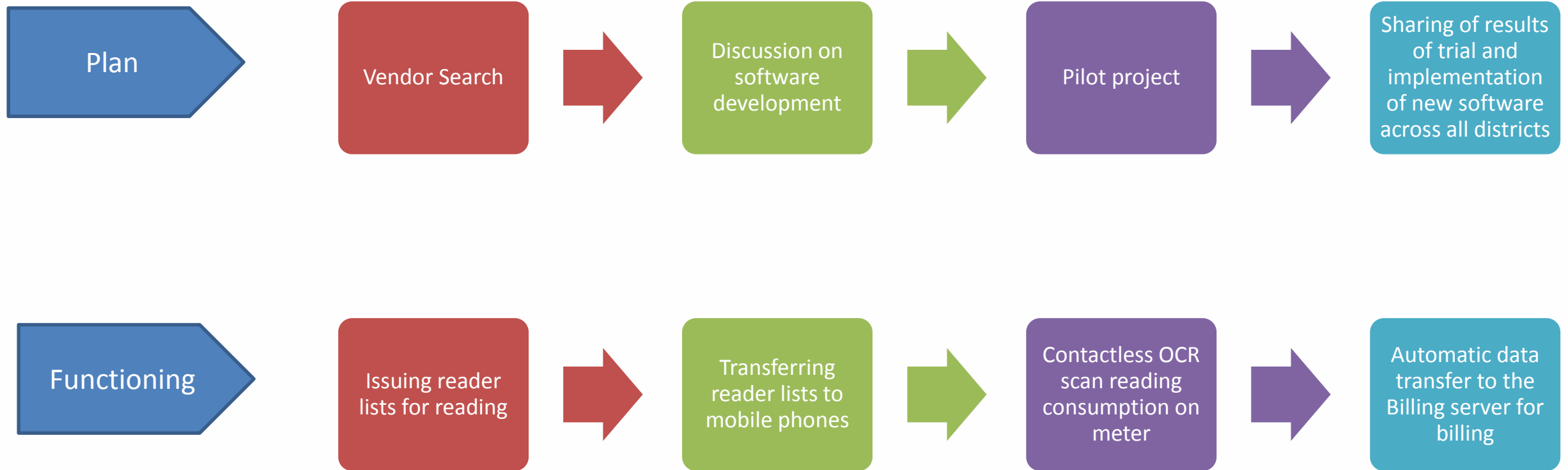
Proposed Solution



S. No.	Root Causes	CAs/ Solutions Action Plan	Responsibility	Merit	Demerit	Result (Accepted/ Rejected)
1.	Punching Error	Training to MR's	Nitesh Bhardwaj & Ritika	Accuracy in reading punched	Very Low Success rate	Rejected
2	Punching Error	Artificial Intelligence	Nikunj Gupta	Accuracy in reading punched, Instant E- Bill, Theft Detection	Recurring Cost	Accepted
3.	Count of TNC allocated is high	Increase in Manpower	BA Agency	Accuracy in reading punched	High Opex Cost	Rejected



Trial Implementation and Checking Performance



Results of trial implementation

Total number of meters for reading	Unaccessible meters (marked for additional reading)	Accessable meters, with readings	%	Meters on good condition metering spot	OCR recognition	%	Meters on bad condition metering spot	OCR recognition	%	Correct data readings after control	%
206	19	187	90,78%	124	117	94,35%	63	41	65,08%	187	100,00%

Count of wrong reading in portion
Before Trial

Wrong Reading count in Portion	
Month	Count of wrong reading
Apr'19	7
May'19	6
Jun'19	9
Jul'19	7

Count of wrong reading in portion
After Trial

Wrong Reading count in Portion	
Month	Count of wrong reading
Aug'19	0
Sep'19	0

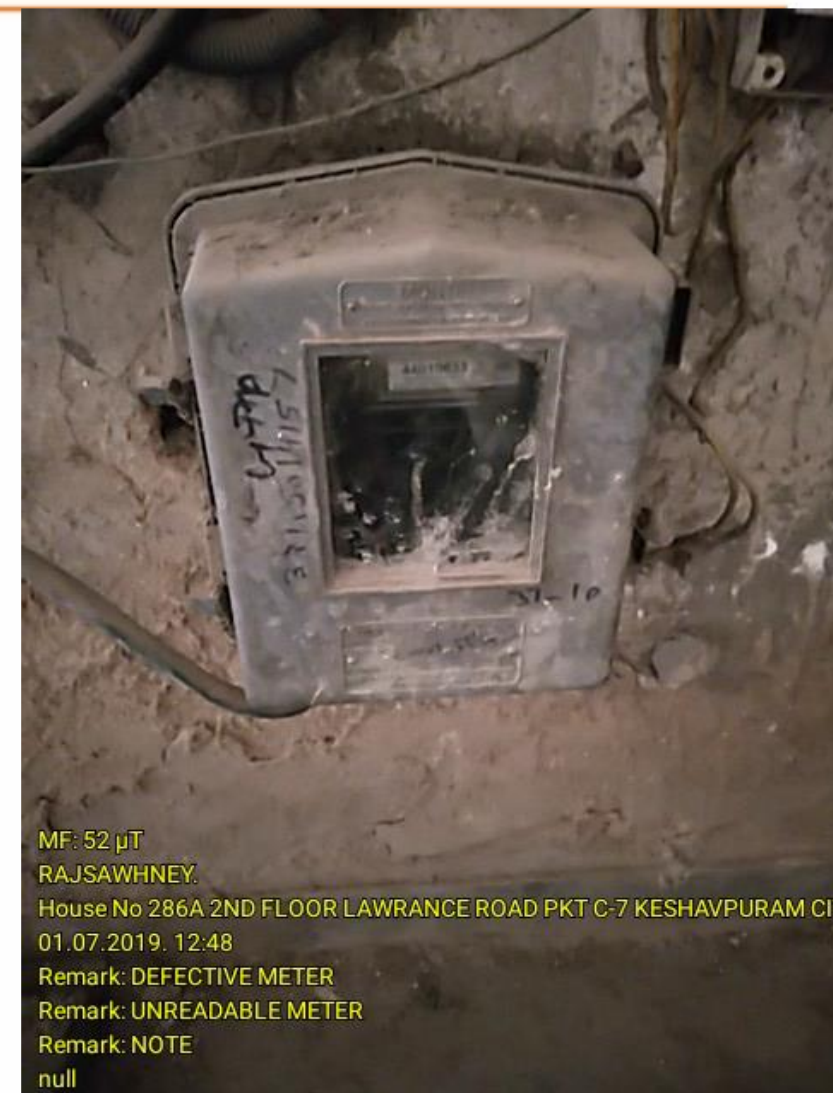
Few Glimpses of Trial



Example of good condition meter spot:



Example of bad condition meter spot



BENEFITS (FQSSE)



Financial

- Accumulation Bill raised amounting 57 Lacs.



Quality

- 100 % Photographs in base reading
- Reduction In Follow-up by 30%.



Satisfaction

- Customer Complaints Reduction by more than 70%.
- Sending WhatsApp Message to customer from mobile application



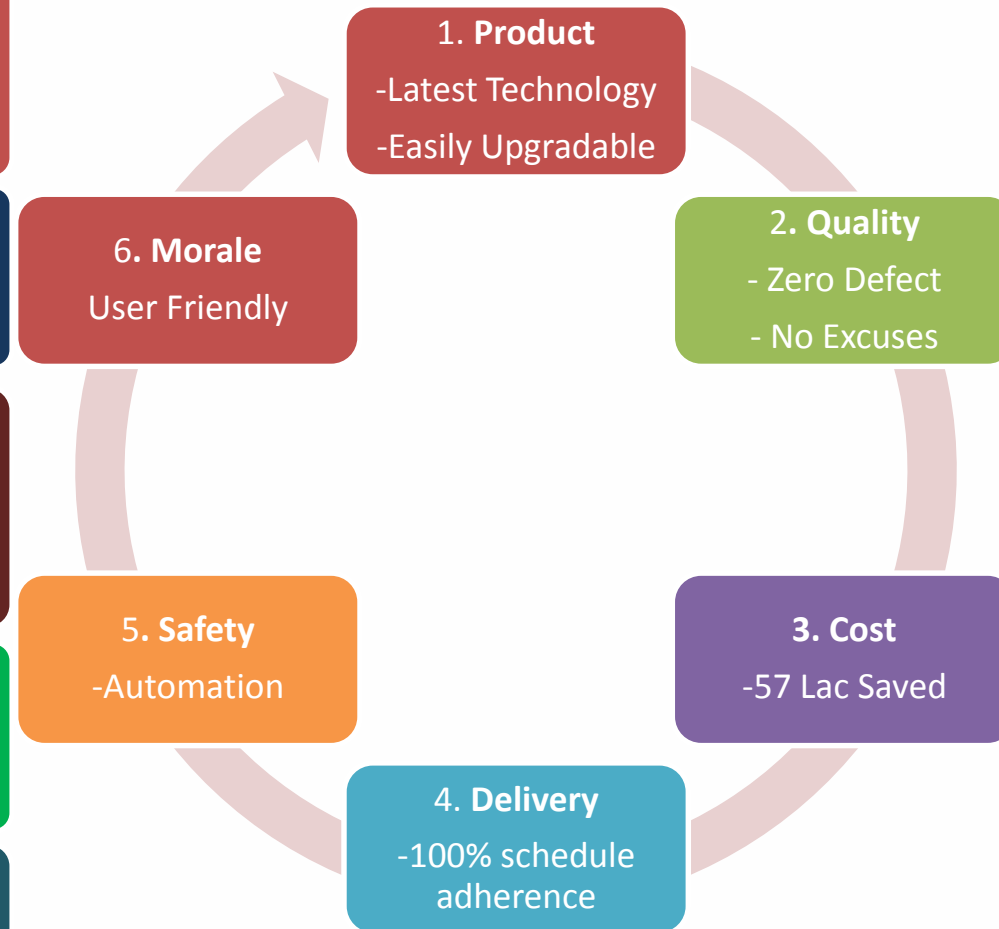
Safety

- Reduction in multiple Site Visits by MRG Meter readers leading to less chance of Incidents.



Environment :

- Saved Carbon Footprints.



Thank You!

