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The Level of Satisfaction and Problems Encountered by the Residential Household Respondents on the Power Plant of SPUG in Biri, Northern Samar

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Abstract: This study generally aimed to determine the level of satisfaction of residential household respondents over the Small Power Utilities Group (SPUG) Power Plant services and the level of seriousness of the problems encountered by said respondents on the operation of the SPUG in Biri, Northern Samar.

This study employed the descriptive type of research. By Sloven's formula, the respondents of this was computed to be 163 out of total residential households of 812. A survey questionnaire was used in this study with questions taken from the survey questionnaires of similar studies and were pretested in San Antonio, Northern Samar, which is already energized by SPUG power plant.

On thelevel of satisfaction of SPUG operation, the residential household respondents revealed they are satisfied on the adequacy of the existing service hours and the customer services of the SPUG power plant, although majority of them claimed the SPUG power plant and office isvery inaccessibleto them. Majority of the respondents considered the long/extended power interruptions, delayed restoration of power services and inconvenience on household activities requiring electricity as the very serious problems they encountered with the services of the SPUG power plant. The respondents considered also the lack of power plant personnel, sectional power interruptions, scheduled power interruption for system maintenance, absence of proper dissemination of interruptions, and breakdown or damages on electrical appliances as serious problems.

Keywords: Level of Satisfaction, Level of Seriousness, Power Plant, SPUG

Introduction

Electricity is one of the most important blessings that science have given to mankind. It also became a part of modern life and one cannot think of a world without it. It has many uses. It is used for lighting rooms, operating fans and domestic appliances, like electric stoves, refrigerators, air conditioners, etc. All of these provide comfort to people.

In Section 70 of the Republic Act 9136 or popularly known as the "Electric Power Industry Reform Act (EPIRA)" of 2001, the National Power Corporation (NAPOCOR), a national government-owned and controlled corporation is mandated to perform missionary electrification function through the Small Power Utilities Group (SPUG). It is responsible for power generation and its associated delivery systems in areas that are not connected to the transmission systems. As of 2013, Small Power Utilities Group or SPUG— manages 298 plants in 231 service areas in 207 municipalities across 35 provinces in the country. SPUG's dependable capacity of 244 MW in 2013 serviced some 39 electric cooperatives and 10 LGUs. The Group provided power to 3,128 off-grid barangays which translates to some 755,862 households nationwide by year end. Another significant development are the reforms in fuel management practices of SPUG that ensured fuel supply to these facilities for the succeeding years. The NPC revisited the fuel management manual for SPUG plants, gathering plant managers together for the first time in November, to respond to the unique peculiarities of these smaller plants and effectively address deficiencies in fuel delivery and management systems. These consultations have set the standard for a more integrative and participative approach to respond to the concerns of SPUG plants nationwide since. (www.spug.gov, 2015)

Northern Samar has two (2) power sources and these are the NAPOCOR – Main and the NAPOCOR – SPUG. NAPOCOR – Main supplies power in the province through the distribution utility Northern Samar Electric Cooperative (NORSAMELCO) since 1977 with a peak load of 14,440kW as of June 2015. Since part of the province are unviable areas for electrification, the NPC-SPUG has served the islands of Biri, Capul, San Antonio, San Vicente and Batag under the mandates of EPIRA.

As of today, Biri town is energized under the missionary electrification of the Small Power Utilities Group (SPUG). It formally started its commercial operation on December 4, 1997 with two (2) generator sets, each with 13 kW rated capacity. The plant personnel are based on operating hours of 3, 6 and 12 personnel per plant. The initial time of operation Is 6 hours – 6 PM to 12 MN – then later extended to 8 hrs – 4 PM to 12 MN – with a total demand of less than 100 kW. In 2009, one unit from San Vicente Diesel Power Plant (DPP) was transferred to Biri DPP of the same rating and brand, thus increasing the operation to 12 hours (12 NN to 12 MN) up to the present (NORSAMELCO, 2015).

Having served Biri for sometime, there is a need to know whether the respondents are satisfied of how the SPUG power plant serve them.The Howell Research Group (2013) measured customer satisfaction using five service attributes for electric service which include overall reliability, restoring service when power outage occurs, minimizing power outage, providing information about extended outage and overall value considering the quality and cost of electric services.Abdyrasulova, et al. (2013) conducted a study regarding the electrIcity distribution and consumer difficulties related to low voltage and power outages. The findings showed that 51.0% of the respondents claimed they experience voltage problems. More than a half of the respondents experienced power outages due to technical reasons (breakdown, failures of lines/grids, transformers); shortage of electricity in the area, and short-term outages due to power line surges. Furthermore, about 18.9% of the household-respondents stated that their appliances (TV sets, refrigerators and other household devices) were damaged.

Since electricity has a great impact on the lives and sources of living of individuals and with the present situation of the electricity service of SPUG, the researchers conducted this study to determine the level of satisfaction of and the problems encountered by the residential household respondents of the SPUG in Biri, Northern Samar. The result of this study may be used to formulate recommendations to make the electricity supply more convenient to all the consumers.

This study generally determined the level of satisfaction of and the problems encountered by residential household respondents of the SPUG in Biri, Northern Samar.

Materials and Methods

This study was conducted in the Municipality of Biri, Northern Samar. It is a fifth class municipality in the first district of Northern Samar with a total population of 11,767 according to the 2015.

Biri, is one of the islands of Northern Samar Province that is energized by the National Power Corporation – Small Power Utilities Group (SPUG) using a Diesel Power Plant. There are 812 active member-households energized by the SPUG in the municipality as per monthly report of NORSAMELCO for the billing and payment. Moreover, these active members include the residential household and business/commercial establishment electricity users from the eight (8) barangays in the municipality.

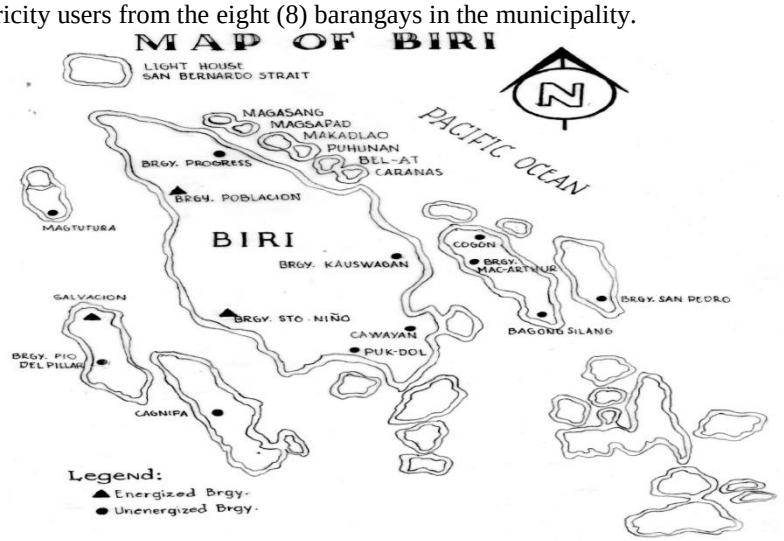

Figure 1. Map of Biri, Northern Samar.

This study utilized a descriptive research design which is aimed to describe twosocio-economic profile characteristics of the residential household respondents, their level of satisfaction of the power services of the SPUG and the level of seriousness of problems encountered.

The population of this study is composed of the 812residential household respondents. The respondents were determined through random sampling technique.

Table 1. The distribution of residential household respondents in the different barangays of Biri, Northern Samar.

Street	No. of Consumers	No. of Respondents
Salvacion	120	24
Delos Reyes	108	22
San Roque	50	10
San Isidro	52	10
Bariis	115	23
San Vicente	118	24
Palhugan	204	41
Tawi-tawi	45	9
Total	812	163

Using the Sloven's formula, the respondents of this study was determined as 163 residential household respondents in the municipality of Biri N. Samar.

This study adopted a survey questionnaire from the studies conducted by Zhang and Han (2014); Lin and Niu (2009); N. Abdyrasulova et al., (2013): Howell Research Group (2013), and Charu and Mehrotra (2013); Usman (2013) and Akaranga (2014). The relevant items in the questionnaires of these previous studies were taken and combined to formulate a questionnaire for this study. The questionnaire is composed of two (2) parts,(A) comprised the level of satisfaction of the respondents on the power operations of SPUG which has 6 indicators rated using the scale of 1 to 5 and (B) comprised the seriousness of the problems encountered by the respondents on the power operations of SPUG which has 10 item indicators rated by the scale of 1 to 5.The samples of questionnaires were pre-tested in the Municipality of San Antonio N. Samar which is also energized by SPUG.

The level of satisfaction of the consumer respondents were scored and interpreted using the following scale.

Rating	Range	Adjectival Interpretation
5 –	4.2-5.0	Very satisfied
4 –	3.4-4.1	Satisfied
3 –	2.6-3.3	Undecided
2 –	1.8-2.5	Dissatisfied
1 –	1.0-1.7	Very dissatisfied

The seriousness of the problems encountered by the respondents were scored and interpreted using the following scale.

Rating	Range	Adjectival Interpretation
5 –	4.2-5.0	Extremely Serious
4 –	3.4-4.1	Very Serious
3 –	2.6-3.3	Serious
2 –	1.8-2.5	Less Serious
1 –	1.0-1.7	Not Serious

The distribution of questionnaires to gather the primary data was personally administered by the researchers. First, the letter of permission to conduct the study was submitted to the Plant-in-Charge of Biri SPUG as well as the Municipal Mayor of Biri N. Samar. After it has been confirmed and approved, a letter to the residential household respondents was also prepared and, together with the questionnaire, these were distributed to the respondents.

The data gathered on the level of satisfaction and the problems encountered by the respondents of the SPUG were summarized using the frequencies and weighted mean with the help of Data Analysis Tool Pack VBA - Microsoft Excel 2007.

Results and Discussion

The level of satisfaction of the residents of Biri N. Samar relative to the operation of SPUG is presented in Tables 1 to 4.The frequency distribution of the respondents on the accessibility of location of the power plant is shown in Table 1.The data showed that 146 respondents out of 163 were aware of the location of the office and power plant. It showed that 17 or 11.6 percent of consumer respondents who claimed that the

SPUG power plant and office is very inaccessible for them as consumers ; 67 or 45.9 percent claimed that SPUG office and power plant is inaccessible for them; 16 or 11.0 percent were undecided; 35 or 24.0 percent alleged that the SPUG power plant and office is accessible for them; and 11 or 7.5 percent averred that said office and power plant is very accessible for them.

Table 1. The frequency distribution of the satisfaction of respondents on the accessibility of the location of power plant.

Level of Satisfaction on the Accessibility of SPUG	Residential Household Respondents	
	Frequency	Percent
Very inaccessible	17	11.60
Inaccessible	67	45.90
Undecided	16	11.00
Accessible	35	24.00
Very accessible	11	7.50
Total	146	100.00

The frequency distribution of respondents on the adequacy of service hours during daytime is shown in Table 2.The data showed that 3 or 1.84 percent of consumer respondents indicated very inadequate service hours during daytime; 13 or 7.98 percent for inadequate; 36 or 22.08 percent were undecided; 76 or 46.63 percent for adequate; and 35 or 21.47 percent indicated very adequate.

Table 2. The frequency distribution of the satisfaction of the respondents on the adequacy of service hours during daytime.

Satisfaction on Daytime Services	Residential Household Consumers	
	Frequency	Percent
Very inadequate	3	1.84
Inadequate	13	7.98
Undecided	36	22.08
Adequate	76	46.63
Very adequate	35	21.47
Total	163	100.00

The frequency distribution of respondents on the adequacy of service hours during nighttime is shown in Table 3.

The data showed that 4 or 2.50 % of the respondents indicated very inadequate service hours during night time; 8 or 4.90 % for inadequate; 36 or 22.10 % were undecided; 76 or 46.60 % for adequate; and 39 or 23.90 % indicated very adequate service hours during night time.

Table 3. The frequency distribution of the satisfaction of the respondents on the adequacy of service hours during night time.

Satisfaction on Nighttime Services	Residential Household Consumers	
	Frequency	Percent (%)
Very inadequate	4	2.50
Inadequate	8	4.90
Undecided	36	22.10
Adequate	76	46.60
Very adequate	39	23.90
Total	163	100.00

Table 4 presents the frequency distribution of the respondents on the satisfaction to the customer

service of the SPUG.

The data shows that 4 or 2.5 % of the respondents are very dissatisfied of the customer services of the SPUG, 14 or 8.60 % are undecided; 19 or 11.70 % are very satisfied; 24 or 14.60 % are dissatisfied; and 102 or 62.60 % satisfied on the quality of customer service of the SPUG.

Table 4. The frequency distribution of thesatisfaction of respondents on the customer services of the SPUG.

Satisfaction on Customer Service	Residential Household Respondents	
	Frequency	Percent
Very dissatisfied	4	2.50
Dissatisfied	24	14.60
Undecided	14	8.60
Satisfied	102	62.60
Very satisfied	19	11.70
Total	163	100.00

On the level of satisfaction of respondents, majority of the respondents claimed that the SPUG power plant is inaccessible because their houses are 1 to 3 km from the power plant while there are some respondents who said that the power plant is very inaccessible for them because this is 4 – 5 km away. Most of the respondents indicated that the service hours of the power plant is adequate both during daytime and night time, which means that for now the electric power generated by the SPUG is enough for them to do their activities and to operate their gadgets/equipment requiring electric power. Majority of the respondents are satisfied with the customer services of the SPUG.

Generally, the residential household respondents are satisfied on the operation of the SPUG in Biri, Northern Samar, although the SPUG power plant and office are inaccessible according to most respondents. This implies that the SPUG power plant should have been located nearer to the residents so that they can easily request for repair on their electrical connections, among others.

The problems encountered by residents on the power plant operations of SPUG is shown in Table 5. The data reveals that most of the respondents indicated long/extended power interruptions as a very serious problem with a mean of 3.96; and the restoration of the power interruptions at some certain causes, planned/unplanned, is not quick with a mean of 3.47. The respondents indicated inconvenience on household activities as a serious problem with a mean of 3.36;the damages on electrical appliances due to voltage fluctuations with a mean of 2.87; the breakdown on equipment and appliances due to voltage fluctuations with a mean of 2.75; not enough personnel to do repair and restoration with a mean of 3.33; the sectional power interruptions with a mean of 3.09;the scheduled power interruptions with a mean of 3.02; and no proper dissemination of information about long/extended power interruptions with a mean of 3.00.

Table 5. The sum, mean and interpretation of the respondents' responses on problems encountered on SPUG power operations.

Problems Encountered	**Sum**	**Mean**	**Interpretation**
Inconvenience on household activities which depend on electricity.	547	3.36	VS
Damages on electrical appliances due to voltage fluctuations.	468	2.87	S
Breakdown on equipment and appliances due to voltage fluctuations.	448	2.75	S
Not enough personnel for repair and restoration.	542	3.33	S
Sectional power interruptions	504	3.09	S
Scheduled power interruptions during maintenance.	493	3.02	S
No proper dissemination of information about long/extended power interruptions.	489	3.00	S
Restoration of the power interruptions at some certain causes, planned/unplanned, is not quick.	566	3.47	VS
Long/extended power interruptions due to typhoons or	646	3.96	

other calamities causing power failure.		VS
Grand Mean	**3.21**	**S**

Legend : VS – Very Serious, S – Serious, LS – Less Serious

The data on the problems encountered shows that the veryserious problems are the long/extended interruptions, delayed restoration of the power plant operations, and inconvenience on household activities using electricity. The topmost very serious problem alleged by the respondents is long/extended interruptions due to typhoons and other calamities which is a uncontrollable problem since the Samar Island is frequently visited by typhoons. Every year about 5 – 15 typhoons passes through Northern Samar which destroy electrical connections and installations aside from its destruction of houses, properties, crops and animals. Actually due to massive destruction of electrical installations and connections to houses, the restoration of the operation of the SPUG power plant is delayed considering that there are only 3 personnel manning the power plant, 1 plant-in-charge and 2 electrical operators. Because of these extended power interruptions and slow restoration of power services, the respondents claimed that they experience inconvenience in their household activities using electricity. These problems are the major concerns of the plant-in-charge of the SPUG Power Plant implying that he should try his best to improve its services to the people of Biri.

The respondents claimed that the very few power plant personnel to do repair and restoration, sectional power interruptions, scheduled power interruptions during maintenance of the power plant, absence of proper dissemination of information about long/extended power interruptions, damages on electrical appliances, and breakdown of equipment and appliances due to voltage fluctuations are serious problems. These allegations imply that additional power plant personnel should be hired to speed up the restoration of the electrical services damaged by calamities; sectional power interruptions should be minimized; scheduled power interruptions during the maintenance of the power plant should not take so long; there should proper and quick dissemination of information about long power interruptions so that the people can prepare themselves for it; and to strengthen the power generation of the power plant to avoid voltage fluctuations which can damage electrical appliances or causes the breakdown of equipment and appliances.

Conclusions

In this work, it is concluded that the problems encountered by the respondents on the operation of the SPUG in Biri, Northern Samar, were serious with a grand mean of 3.21. This implies that the power plant in-charge should seriously look into these problems and plan/implement remedial measures to minimize such problems.

The researchers concluded that the residents of Biri, Northern Samar are satisfied although the SPUG power plant is inaccessible to them. Presently, the people of Biri are satisfied with the services of the power plant. However, the researchers concluded also that generally the problems encountered by the Birianons as regards the operation of the power plant are serious which needs immediate remedial measures to further improve the services extended by the SPUG power plant.

The researchers recommend that to minimize the long/extended power interruptions due to typhoons or other possible causes of interruptions and for more prompt and quick restoration, the SPUG management must properly address the lack of personnel. In cases the power interruptions are caused by transmission faults, they should actively coordinate with NORSAMELCO for additional line men.

The researchers also recommend that the SPUG management and the Local Government of Biri should help each in disseminating the spot reports on power interruptions to all residents of the municipality.

The conduct of a consumer survey regularly is recommended so that the SPUG management is informed on certain power operation issues raised by the residential household respondents which may be given immediate solution/s. On the other hand, it is recommended to the residential household respondents that they should be assertive on certain disruptions brought by voltage fluctuation and flickers to safeguard their electrical appliances and equipment from damage or breakdown.

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