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Power Supply Problems: Proposed Extension Package

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Abstract: This aimed to assess the electric power supply problems of San Francisco, Cebu as perceived by the electrical consumers; the results were used as basis for proposed extension package. Factors considered were: electrical household consumers' profile and average monthly electrical consumption; problems related to power supply as perceived by the respondents. The significant difference in perception between the consumers and management personnel and the extension package that could be formulated were considered. Descriptive method using questionnaire and supplemented by direct observation were utilized.

The findings showed majority have residential type while the commercial type was few. Appliances owned; electric fans, TV sets and electric iron. Majority used fluorescent lamps and only few used incandescent lamps. Energy consumption of the majority was above minimum only commercial type consumed more.

Mean differences in the perception between household consumers and management personnel on engine breakdown were significant while no significant difference on maintenance operation and low voltage.

Problems met were: engine breakdown, maintenance operation and low voltage. Package on extension program to the community could answer the problem.

Key words: power supply, engine breakdown, extension package

1. Introduction

Electricity is a necessity in modern day living. From the simplest household to the more elaborate dwellings up to the more complex offices and even the most sophisticated edifices, electricity is one of the foremost requirements. Electricity is needed for lighting. It is used to power household appliances, office equipment, industrial machineries and others (Fajardo et al., 1994, p. 1).

Nowadays, electricity becomes an essential part of human life. It provides many valuable things without which life on earth would prove difficult. It enables one to enjoy some comforts. It also facilitates the performance of certain task.

In the past 100 years or so, man has developed many techniques for harnessing electricity and putting it to use. All industrial societies have been drastically transformed by the ability to generate electric power and transmit it over long distances. Electric power runs electric motors in factories, provides building and street lighting in cities, and runs appliances and lights in homes. In addition, electrical phenomena are the heart of

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telephone, radio, television, and radar systems. Valkenburgh et al. (Vol. 1, 1987, p. 1), cited that without electricity, most of the things we use and enjoy today would not be possible.

Electricity also plays an important role in many industrial processes, such as the electroplating of metals, the electric-arc welding of metals, and the use of electrostatic precipitators to remove waste particles from furnace exhausts in many kinds of industrial plants (Groiler Inc., Vol. 10, 1997, p. 134).

Energy consumption every year is increasing due perhaps to the ever increasing population rate, surge of economic growth and expansion.

Camotes Islands' source of electricity is from the National Power Corporation through the distribution by the Camotes Electric Cooperative. Considering that Camotes Island is far from the mainland of Cebu and transportation facilities is inadequate, the cost of power supply is high which is brought about by a high cost of transporting fuel for the machine. The cost of electricity becomes more expensive and will continue to go up with the increase of dollar exchange.

Low voltages and brownouts often experienced by the consumers could delay the many activities of the people involving electricity especially at night time.

Cebu Technological University San Francisco Campus has been experiencing low voltages and brownouts that hamper the normal operation of the University in its instructional activities which involve the use of machines and other equipment.

A broader knowledge on the power supply problems of may give the school authorities, particularly to the researcher, a better perspective of what extension package they could offer to the community to possibly solve the power supply problems.

2. Materials and Methods

The descriptive method is used since this is a fact — finding study on which scientific judgments is based. The purpose of this method is to describe the status of events, nature of object or subject as they exist at the time when the study was conducted (Calmorin et al., 1999, p. 45).

The main thrust of the study is to assess the power supply problems as perceived by electrical consumers to be used as basis for proposed extension package.

In order to answer the main problem, the inquiries were focused on the input of the study as to the profile of the electrical household consumers as to: type of electric cooperative membership, combined monthly family income, kind/type and number of electrical appliances, kind and number of electrical lamps, average monthly electrical consumption; problems related to power supply as perceived by the respondents as to: fuel supply, engine breakdown, maintenance operation, low voltage.

To answer the inquiries, the questionnaire was used as the instrument for gathering data. Facts not covered in the main instrument were taken through informal interviews, participative observation, ocular inspection, documentary analysis and statistical computation.

The output of this study is an extension package on energy conservation, basic electrical safety practices, house wiring maintenance, and skills training program.

The research area is the municipality of San Francisco which is one of the islands in Camotes situated at Northeastern part of Cebu province.

The respondents of this study were the members of the Camotes Electric Cooperative of the town of San

Francisco, Cebu and the management maintenance personnel where they were randomly selected.

The total of 328 respondents for the members of the Camotes Electric Cooperative of the town of San Francisco, Cebu represented 10 percent and out of the 33 management/maintenance personnel, 27 or 81.82 percent were taken as respondents. The overall total of 355 people were taken as respondents of the study where they were randomly selected.

The questionnaire was used as a main tool for data gathering. The first part of the questionnaire gathered data on the profile of the respondent pertaining to: (1) type of electric cooperative membership, (2) combined monthly income, (3) types and number of electrical appliances, (4) types and number of electric lamps, (5) average monthly electrical consumption.

The second part inquired about the causes of the problems of the electric power supply distribution as to: (1) fuel supply, (2) engine breakdown, (3) maintenance operation, and (4) low voltages.

The instrument was personally administered by the researcher. The respondents were given ample time to answer the questionnaire after which it was collected by the researcher. An informal interview was then made to supplement facts not taken in the instrument. A survey of the vicinity was also made by the researcher to gather more information needed.

The data gathered were tallied, collated, tabled and subjected to the following statistical computation:

3. Results and Discussion

The profile of the household consumers include the type of electric cooperative membership, combined monthly family income, kind/type and number of electrical appliances, kind and number of electrical lamps and average monthly electrical consumption. The problems related to electric power supply distribution as perceived by the respondents as to: lack of fuel supply, engine breakdown, maintenance operation, and low voltage. Almost all household consumers' energy consumption is above minimum and that about one half consumed between the range of 61 to 120 KWH monthly. The findings stress further that those of commercial type membership consumed more electric power per month than those of residential type membership.

This discussion focused on some problems related to power supply distribution as perceived by the respondents as to fuel supply, engine breakdown, maintenance operation and low voltage.

3.1 Fuel Supply

Delay in the delivery of fuel due to inclement weather condition got a weighted mean of 2.68, delay in the purchasing of fuel, 2.58 both described as Always Experience. No transportation facilities available has a weighted mean of 2.27 and is described as Sometimes Experienced. The average weighted mean is 2.51 with a verbal description of Always Experienced.

While the management/maintenance personnel responses, Delay in the delivery of fuel due to inclement weather condition got a weighted mean of 2.70, described as Always Experience. No transportation facilities available got a weighted mean of 1.96, and delay in the purchasing of fuel with a weighted mean of 1.52 both is described as Sometimes Experienced. The average weighted mean is 2.06 with a verbal description of Sometimes Experienced.

Further scrutiny entails that the consumers' and the management/maintenance personnel differ in their perception. The consumers always met problems in electric power supply distribution as to fuel supply while the management/maintenance personnel metsometimes.

The computed value as to the problems met by the respondents in the electric power supply distribution as to Fuel Supply is 3.91, which is greater than the table value of 1.96.

The findings rejected the null hypothesis of no significant mean difference between the perception of the consumers and management/maintenance personnel as to fuel supply. The findings signify that both consumers and management/maintenance personnel differ in their perception on the problems met as to fuel supply because the computed value of the test of significant mean difference is greater than the table value.

3.2 Engine Breakdown

Engine breakdown is due to any part that is damaged and no longer functioning. The consumer respondents in the electric power supply distribution as to engine breakdown. Fuel trouble due to faulty filter, got a weighted mean of 2.42, starter fails to work, a weighted mean of 2.38, shorted electrical wiring, weighted mean of 2.32, and all is verbally described as Sometimes Experienced. The total weighted mean is 2.37 with a verbal description of Sometimes Experienced.

The management/maintenance personnel responses on the other hand were all verbally described as Sometimes Experienced such as Shorted electrical wiring, with a weighted mean of 1.63, Fuel trouble due to faulty filter, with a weighted mean of 1.55, and Starter fails to work, with a weighted mean of 1.52. The average weighted mean of the responses of the management/maintenance personnel is 1.57 and is described as Sometimes Experienced.

Further reveals that both the consumers and the management/maintenance personnel sometimes experienced problems regarding power supply distribution due to engine breakdown.

The computed value as to the problems met by the respondents in the electric power supply distribution as to Engine Breakdown is 7.19, which is greater than the table value of 1.96.

The findings rejected the null hypothesis of no significant mean difference between the perception of the consumers and management/maintenance personnel as to engine breakdown. The findings signify that both consumers and management/maintenance personnel differ in their perception on the problems met as to engine breakdown because the computed value of the test of significant mean difference is greater than the table value.

3.3 Maintenance Operation

The problems met by the consumers in the power supply distribution as to maintenance operation which are described as Always Experienced were: Rotten electrical post with a weighted mean of 2.68, clearing of vegetation underneath electrical wire with a weighted mean of 2.64. Faulty transformer with a weighted mean of 2.29 is described as Sometimes Experience. The average weighted mean is 2.54 and is verbally described as Always Experienced with a standard deviation of 0.65.

As to the management/maintenance personnel responses which described as Always Experienced were rotten electrical post with a weighted mean of 2.59, and clearing of vegetation underneath electrical wire with a weighted mean of 2.55. Faulty transformer with a weighted mean of 2.41 is described as Sometimes Experienced. The average weighted mean is 2.52 and is described as Always Experienced with a standard deviation of 0.62.

The result indicates that the information obtained from the community consumers with an average weighted mean of 2.54 is almost the same with that from the management/maintenance personnel with an average weighted mean of 2.52, both were verbally described as Always Experienced.

The Table reveals that the computed value as to the problems met by the respondents in the electric power supply distribution as to Maintenance Operation is .16, which is lesser than the table value of 1.96.

The findings accepted the null hypothesis of no significant mean difference between the perception of the consumers and management/maintenance personnel as to maintenance operation. The findings signify that both consumers and management/maintenance personnel have a parallel perception on the problems met as to maintenance operation because the computed value is lesser than the table value of the test of significance mean difference.

3.4 Low Voltage

The responses from the consumers which were verbally described as Always Experienced such as: Overloading the equipment or conductors with a weighted mean of 2.59, short circuit between line one and line two got a weighted mean of 2.78, and ground fault with a weighted mean of 2.61. The average weighted mean is 2.66 with a descriptive rating of Always Experienced.

The responses of the management/maintenance personnel were verbally described as Always Experienced such as: Overloading the equipment or conductors with a weighted mean of 2.63, and ground fault with a weighted mean of 2.67. Short circuit with a weighted mean of 2.22 and described as Sometimes Experienced. The average weighted mean is 2.51 and described as Always Experienced.

The findings reveal that the responses between the consumers and the management/maintenance personnel shows that low voltage of electric power supply always exist in the community.

The computed value as to the problems met by the respondents in the electric power supply distribution as to Low Voltage is 1.15, which is lesser than the table value of 1.96.

The findings accepted the null hypothesis of no significant mean difference between the perception of the consumers and management/maintenance personnel as to low voltage. The findings signify that both consumers and management/maintenance personnel have parallel degree of perception on the problems met as to low voltage because the computed value is lesser than the table value of the test of significance mean difference.

4. Conclusion

There is an existing power supply problems as to fuel supply, engine breakdown, maintenance operation and low voltage. On this regard, there is a need for the community to upgrade or enhance their knowledge and ability to conserve energy, take safety measures in handling electricity at home. To make this possible, the Cebu Technological University San Francisco Campus, San Francisco, Cebu in line with their mission could package and extension program to the community.

5. Recommendations

Based on the findings and conclusions in this study the following recommendations are suggested:

(1) There is a need for the consumers and management/maintenance personnel to have a collaborative endeavor in minimizing if not eliminating the source of the problems met in the electric power supply distribution especially in the maintenance operation.

(2) There is a need for educational upgrading both the consumers and the management/maintenance personnel in terms of safety measures and energy conservation.

(3) The proposed skills training program of activities should be given due consideration by the Cebu

Technological University San Francisco Campus, San Francisco, Cebu for immediate implementation.

Household tips on safety measures should be distributed by the management/maintenance personnel to the consumers.

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