# Impact of Electricity and Availability of Spare in servicing Electronic Devices

**Project submitted by:**

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**Executive Summary:-**

The field of Electronics is an important field. Some of the electronic devices are LED and LCD televisions, computer, laptops etc. The firm which I have taken for the study is an electronic servicing firm. The firm deals with the servicing of electronic devices such as LED and LCD televisions. Two problems faced by the electronic servicing firm and the problem solving approaches are discussed in the proposal. These problems include irregular availability of electricity with frequent power cuts and unavailability of major spare parts of the electronic devices in local areas. The solutions are provided for the problems and analysed the progress of income.

**Organisation Background:-**

Name of firm : J. Y. M. Electronics

Owned by : Mr. Y. Manikandan

Location : Railway Station road,
Mathilakam,Marthandam,
Kanya kumari,
Tamil Nadu - 629165.

Contact : 9444573332

Google Map link: https://maps.app.goo.gl/UAJuEHnzh1kz1o7R6

Business Site : https://jym-electronics.business.site/


Description of the firm: J. Y. M. Electronics is an electronic servicing company. The company services electronic devices like LED and LCD televisions. They service at a very low cost in faster time. It belongs to B2C type of business. If the serviced product comes back with same complaint within one month, they service the device at free of cost.

**Problem Statement:-**

**Electricity:**

Electronic Servicing is completely based on electricity. When the power is cut for a whole day or for few hours, the work cannot be done in the period and decreases the performance of the firm.

**Unavailability of spare parts:**

For an electronic device to be serviced, there is a need for replacement of damaged parts. Since the firm is situated in rural area, most of the spare parts are unavailable in the locality which decreases the profit of the firm.

**Background of the problem:-**

**Electricity:-**

Electricity is used in various stages of sevicing the televisions. It is used to check the problem, soldering the components, software installation using computer, desoldering the components, BGA rework station, observation of the television after servicing. In the Marthandam where this service centre is located, the power cut is scheduled on first Thursday on every month. Also during rain and even wind can make the power shut in this area. When the power is cut, no servicing can be done in this time and the time required to service the televisions are increased. This decreases the performance of the firm.

**Unavailability of spare parts:-**

Spare parts used to replace the damaged parts in television are display, motherboard, powersupply board, backlight, capacitor, resistor, IC's, MOSFET, adapter, etc.. Spare parts are rarely available within a short distance of 2 kms. Most of the spare part are to be bought from the shops situated in Nagercoil, Balaramapuram, Thiruvananthapuram which are at a distance of more than 25 kms. So the cost for travelling lost due to petrol charges is high. This cannot be charged from the customers. So this decreases the profit of the firm.

**Steps to be taken to solve the problem:**

**To solve the problem of electricity:** The use of inverter or solar power can be used to supply electricity during power cuts. Since the cost of solar power is high, the use of inverter can be

very effective. This reduces the time period required for a television to be serviced. Hence the performance of the firm is increased.

**To solve the problem of unavailability of spare parts**: To solve the problem of unavailability of spare parts, simple initiatives can be implemented. One of the initiatives is that the most required spare parts can be bought extra and kept in stock. Another initiative is that the unavailable spare parts which are not available at a circle more than 25 kms can be bought using online marketing rather than travelling. This can reduce the loss due to petrol charges and the time wasted during travelling. Thus it improves the performance and increases the profit of the firm.

**Data collection**:

The data is collected is the observational data which is collected by open survey and recording information. The data is collected for a period of four months. The data of the month of October, 2022 is collected on November 1, 2022. The data of the month of November, 2022 is collected on December 4,2022. The data of the month of December, 2022 is collected on January 2, 2023. The data of the month of January, 2023 is collected on February 1, 2023

| Week | Period of time | Balance no, of TV's pending from the previos week | No. of LCD TV's | No. of LED TV's | Total no. of TV's | No. of TV's serviced within the week | No. of working days | No. of working hrs | Obtained no. of working hrs because of problems(appx.) | Service charge earned | Loss due to petrol charges (appx.) | Balance profit earned( appx.) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | Oct 02-Oct 08 | 0 | 5 | 12 | 17 | 10 | 4 | 44 | 22 | 4750 | 500 | 4250 |
| 2 | Oct 09-Oct 15 | 7 | 0 | 20 | 27 | 22 | 6 | 66 | 50 | 10700 | 700 | 10000 |
| 3 | Oct 16-Oct 22 | 5 | 1 | 15 | 21 | 16 | 6 | 66 | 47 | 7100 | 650 | 6450 |
| 4 | Oct 23-Oct 29 | 5 | 7 | 10 | 22 | 15 | 5 | 55 | 38 | 7450 | 600 | 6850 |
| 5 | Oct 30-Nov 05 | 7 | 2 | 15 | 24 | 20 | 5 | 55 | 40 | 9500 | 500 | 9000 |
| 6 | Nov 06-Nov 12 | 4 | 3 | 13 | 20 | 18 | 6 | 66 | 55 | 8800 | 700 | 8100 |
| 7 | Nov 13-Nov 19 | 2 | 8 | 10 | 20 | 17 | 6 | 66 | 50 | 8450 | 850 | 7600 |
| 8 | Nov 20-Nov 26 | 3 | 6 | 12 | 21 | 16 | 6 | 66 | 53 | 8100 | 650 | 7450 |
| 9 | Nov 27-Dec 03 | 5 | 1 | 17 | 23 | 19 | 6 | 66 | 51 | 9150 | 1000 | 8150 |
| 10 | Dec 04-Dec 10 | 4 | 5 | 18 | 18 | 16 | 6 | 66 | 38 | 8100 | 650 | 7450 |
| 11 | Dec 11-Dec 17 | 2 | 4 | 20 | 20 | 17 | 6 | 66 | 47 | 8450 | 700 | 7750 |
| 12 | Dec 18-Dec 24 | 3 | 3 | 22 | 22 | 18 | 5 | 55 | 40 | 8800 | 500 | 8300 |
| 13 | Dec 25-Dec 31 | 4 | 1 | 18 | 18 | 15 | 6 | 66 | 53 | 6750 | 800 | 5950 |
| 14 | Jan 01-Jan 07 | 3 | 0 | 20 | 23 | 17 | 5 | 55 | 43 | 8450 | 700 | 7750 |
| 15 | Jan 08-Jan 14 | 6 | 3 | 17 | 26 | 21 | 5 | 55 | 42 | 11100 | 900 | 10200 |
| 16 | Jan 15-Jan 21 | 5 | 5 | 12 | 22 | 16 | 5 | 55 | 44 | 8100 | 500 | 7600 |
| 17 | Jan 22-Jan 28 | 6 | 8 | 16 | 30 | 20 | 6 | 66 | 55 | 9500 | 650 | 8850 |
| | | | | | | | | | | 143250 | 11550 | 127650 |

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Table:1. Data collected from the firm

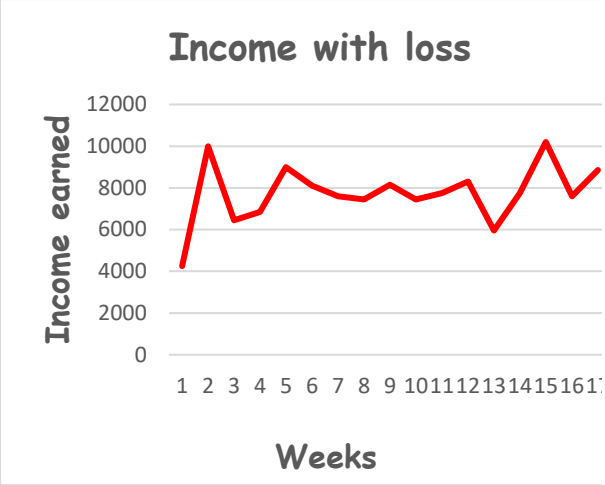


Fig 1: Decreasing level of service charge earned

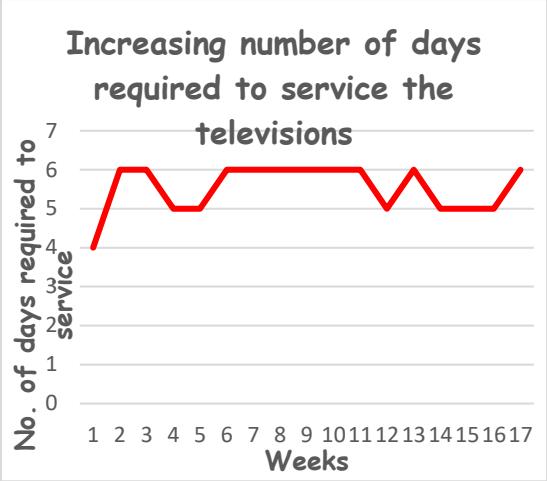


Fig 2: Increasing level of no. of days required for servicing

**Tool used to analyze the data:-**

Microsoft Excel is used to analyze the performance and profit of the firm.

**Expected timeline:-**

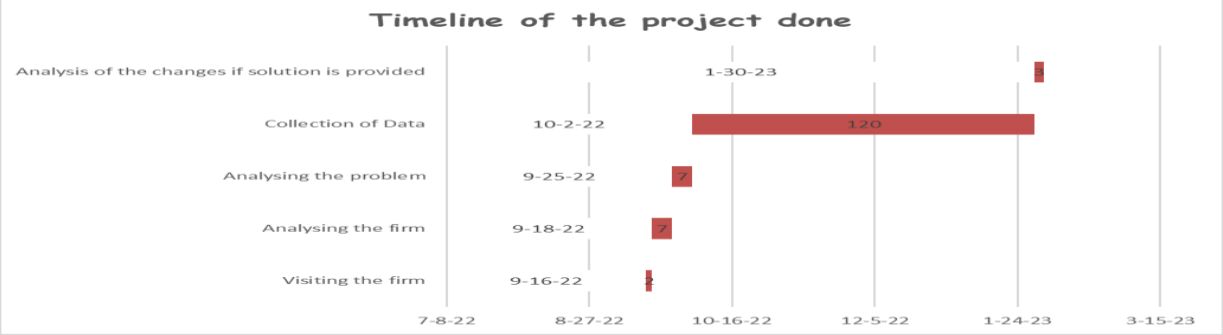


Fig 3: Gantt Chart on the timeline of the project done

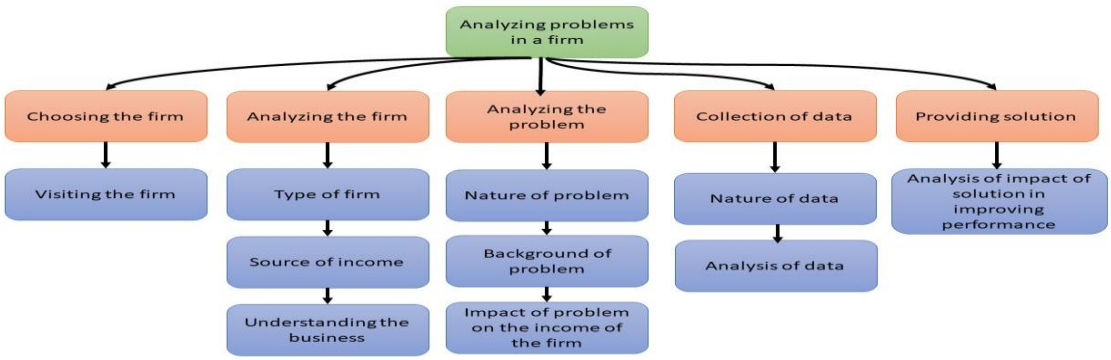


Fig 4: Work Breakdown Structure of the project

## Expected Outcome:-

When the problem is solved by the given solution, the loss due to travelling for spare parts is reduced and the number of days taken to service TV's is also reduced.

| | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Income with loss | 4250 | 10000 | 6450 | 6850 | 9000 | 8100 | 7600 | 7450 | 8150 | 7450 | 7750 | 8300 | 5950 | 7750 | 10200 | 7600 | 8850 |
| Income without loss | 4750 | 10700 | 7100 | 7450 | 9500 | 8800 | 8450 | 8100 | 9150 | 8100 | 8450 | 8800 | 6750 | 8450 | 11100 | 8100 | 9500 |

Table 2: Expected increase in income

| | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| No. of days taken due to dely because of problems | 4 | 6 | 6 | 5 | 5 | 6 | 6 | 6 | 6 | 6 | 6 | 5 | 6 | 5 | 5 | 5 | 6 |
| Expected no. of days actually neede for service | 2 | 4 | 3 | 3 | 4 | 2 | 3 | 4 | 3 | 4 | 4 | 3 | 4 | 3 | 3 | 3 | 4 |

Table 3: Expected decrease in number of days required to service the televisions

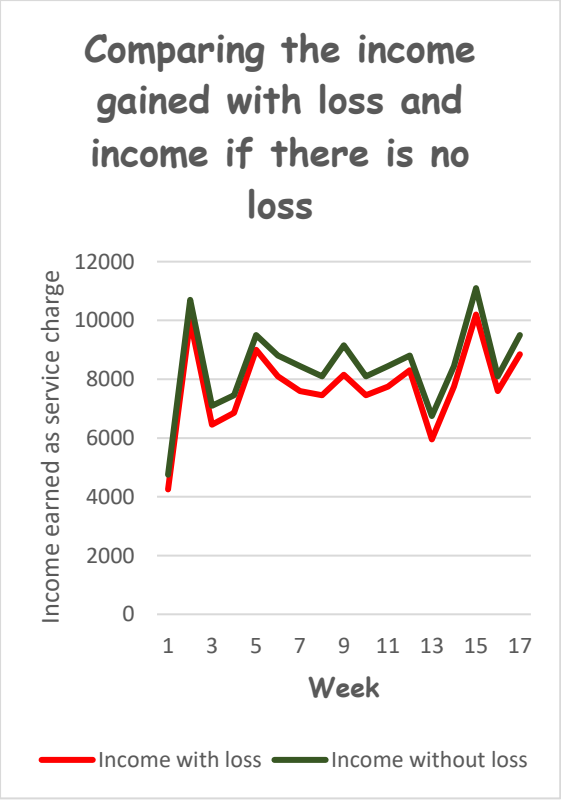


Fig 5: Expected increase in profit

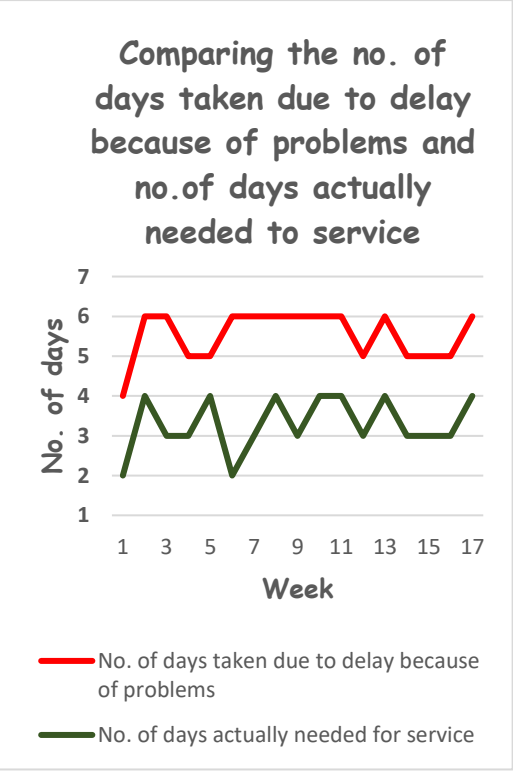


Fig 6: Expected decrease in number of days