

EXPLORING THE PERCEPTIONS OF SOLAR ROOFTOP ENTREPRENEURS ON RAW MATERIAL AVAILABILITY AND AFTER-SALES SERVICE

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Abstract

The purpose of this study is to explore the viewpoints of solar rooftop entrepreneurs in relation to the availability of raw materials and the amount of assistance that is offered after the purchase of solar panels. This investigation will take place within the framework of the rapidly expanding solar energy industry. One possible explanation for the growing demand for solar rooftop installations is that more and more people are becoming aware of solar energy as a viable and ecologically responsible energy choice. However, it is essential to keep in mind that the successful operation and maintenance of solar rooftop systems is dependent on a number of elements, each of which plays a significant role. These criteria include the availability of raw materials for installation as well as dependable after-sales service for the purposes of troubleshooting and maintenance. The current investigation makes use of qualitative research approaches, more particularly focus groups and interviews, in order to investigate the viewpoints of solar rooftop entrepreneurs who are involved in commercial operations in a variety of geographical places. With regard to the acquisition of primary resources and the provision of after-sales help, the results provide a thorough view on the obstacles and possibilities that are linked with these processes. There are a number of variables that contribute to the difficulty of maintaining a regular supply of raw materials. These problems include interruptions in the supply chain, volatility in market pricing, and dependence on resources that are imported. There is a possibility that business owners who have the goal of satisfying the requirements of their customers and cultivating long-lasting connections will likewise demonstrate a keen interest in issues concerning the promptness and quality of post-purchase assistance. The study emphasises the significance of using proactive supply chain management approaches, participating in activities that include local sourcing, and cultivating constructive relationships with suppliers as effective ways for mitigating the risks that are linked with the availability of raw materials. In order to improve the efficacy and efficiency of after-sales service providing, it is essential to provide funding to digital platforms, technical support services, and training programmes. This is a way of enhancing the effectiveness of after-sales service offering. The rise of solar rooftop companies has the potential to hasten the transition towards a more sustainable energy future and to make it easier for solar energy to be adopted by a wider audience. The purpose of these businesses is to encourage the widespread use of solar power by addressing the problems that are now present and making the most of the potential for improvement that are available.

Keywords: After Sales Service, Solar Rooftop Entrepreneurs, Correlation Analysis.

INTRODUCTION

Within the area of renewable energy sources, the solar photovoltaic (PV) energy sector is generally acknowledged as a very promising industry. PV energy is characterised by the utilisation of photovoltaic panels to convert solar radiation into electricity. The primary

reason for this is because it has the capacity to reduce emissions of carbon dioxide and to make a contribution to the slowing down of global warming. The usage of this technology is ascribed to the fact that it has the ability to assist in the accomplishment of CO₂ reduction objectives that have been established by international accords and national governments. Over the course of the last several years, the photovoltaic (PV) industry has seen a remarkable growth rate that is approximately 10 times higher than before. This development is visible via the observed rise in production levels, the construction of large worldwide networks of solar installations, and the availability of a greater choice of financing alternatives to assist the sector. All of these factors have contributed to the increased production levels. In 2018, the installed photovoltaic capacity around the globe passed a key milestone, with approximately 480 gigawatts (GW) already being attained. Solar power is becoming an increasingly important component of the overall energy mix throughout the globe, as seen by this remarkable number, which accounts for nearly 2% of the entire volume of electricity generated worldwide (Nasir, 2021). According to the findings of our investigation, it is anticipated that around the year 2030, the worldwide capacity would have the ability to reach 2840 GW. On top of that, there is a chance that this capacity might be increased even further to 8500 GW by the year 2050. A fair estimate for the future is to anticipate an exponential growth in the amount of trash generated by photovoltaic (PV) systems that have reached the end of their useful lives (Knapp 2021). When all other conditions are held constant, this estimate is based on the premise that the deployment of photovoltaic systems will continue to expand at a fast rate. In addition, it is assumed that the typical lifetime of a photovoltaic panel will continue to be 25 years. There is a substantial quantity of trash that is expected to be created by photovoltaic (PV) panels between the years 2030 and 2050, according to the most recent projections that have been made. To be more specific, it is estimated that between 1.7 and 8 million tonnes of trash would be disposed of in landfills by the year 2030, and a much bigger amount, ranging from 60 to 78 million tonnes, will be thrown by the year 2050. Traditionally, photovoltaic (PV) systems have been operating according to a linear model that is often referred to as the "take-make-use-dispose" paradigm. The extraction of natural resources, the manufacturing and selling of panels, and the eventual disposal of these panels, which often takes place in landfills, are all components of this specific strategy. On the other hand, this kind of disposal has the potential to contaminate the soil and groundwater in the surrounding area. In order for the photovoltaic (PV) business to achieve a large decrease in waste and eventually achieve waste elimination, it is important that the industry adopt a circular, lifecycle approach (Bayu 2019). The adoption of such a viewpoint calls for improvements to be made to the photovoltaic (PV) value chain at each level, beginning with the conception of the product and ending with the management of its end-of-life products. Furthermore, in order for the implementation to be effective, it would be necessary for a variety of stakeholders, including companies, governments, consumers, and academic institutions, to work together.

On the other hand, it is important to point out that a sizeable percentage of the public is still oblivious to the fact that the usage of photovoltaic solar panels is connected with a number of benefits and financial rewards. Solar panels generally have an efficiency that

falls anywhere between 12 and 20 percent of their total output. The degrees of efficiency of solar panels have a direct impact on the amount of space that is required for their installation. Two of the most important aspects that impact the output of a solar panel are the location of the panel and the quantity of solar radiation that it is exposed to. When we talk about the location of the panel, we are referring to its orientation and tilt angle, both of which have an impact on the height at which sunlight hits the surface of the panel (Voorhees, 2016). The effectiveness of the panel in converting solar energy into electricity is therefore affected as a result of this particular factor. Additionally, the quantity of solar energy that is received by the panel is affected by a variety of variables, including the geographical location, the time of year, and the weather conditions. All of these elements work together to determine the total amount of energy that a solar panel generates. One of the most important factors that determines how well photovoltaic (PV) panels work is the capacity utilisation factor, often known as CUF. From the time it gained its independence, the Indian power sector has been confronted with considerable hurdles in terms of reaching its objectives for the generation of energy. The country is in need of an all-encompassing plan to handle the ever-increasing demand for energy that it is experiencing. The demand for this energy has exceeded the ability of conventional energy sources, such as coal, to deliver the necessary amount of energy. Solar energy, which is a kind of energy that is both clean and sustainable, has earned a lot of attention owing to the fact that it produces no carbon emissions and has a tremendous amount of potential. There are several different methods that have been created in order to effectively capture this energy. With the availability of solar systems now expanding to both residential and commercial applications, the solar power industry has undergone a considerable rise in its pace of development. This indicates that the sector is becoming more competitive (Sameti, 2019). The benefits offered by these systems are strengthened, and they have lower expenses associated with upkeep. Due to the adoption of a variety of tax incentives, rebates, and subsidy measures that have been provided by the government, the utilisation of solar power systems and related equipment has become economically feasible. The use of solar energy is becoming more widespread in today's world, and this trend can be seen in both developed and developing countries. The rate of advancement towards the adoption of renewable energy sources varies significantly between developed nations and developing ones, which is something that should be taken into consideration. In contrast to developed nations, who are making concerted efforts to make a full transition to renewable energy sources, developing nations are still in the early phases of this transformation.

Problem Statement

The solar energy industry has seen exponential growth, which has resulted in an increased level of excitement for solar rooftop installations as a viable and environmentally friendly option to renewable energy energy sources. Nevertheless, entrepreneurs in the solar rooftop systems market find major barriers with the accessibility of raw materials and after-sales assistance, despite the potential benefits. Having fast access to high-quality raw materials for installation and trustworthy post-sale assistance for problem-solving and maintenance are two factors that are very important for the

successful operation and maintenance of solar rooftop systems. There is a dearth of information about the ways in which solar rooftop enterprises perceive and experience these essential components. As a consequence of this, there is a lack of awareness of the challenges and benefits that solar rooftop entrepreneurs face when it comes to effectively managing the purchase of raw materials and the provision of after-sales services. The purpose of this study is to analyse the viewpoints of solar rooftop entrepreneurs on the availability of raw materials and assistance after the sale of their products. Additionally, it makes an effort to determine the primary issues and opportunities for growth that are present in these particular sectors. Through the collection of input from solar rooftop entrepreneurs, the purpose of this project is to create ways that will enhance the sustainability and scalability of solar rooftop installations, as well as speed up the transition to renewable energy.

Hypothesis

There is no significant relationship between availability of raw materials and efficient after sales service in Solar panels

There is no significant relationship between warranty of the product and efficient after sales service in Solar panels

There is no significant relationship between providing better user training product and efficient after sales service in Solar panels

LITERATURE REVIEW

A value chain perspective is required in order to get an understanding of the design, manufacture, marketing, and maintenance of photovoltaic (PV) systems from the very beginning to the very end. Michael Porter is the one who came up with the idea of a value chain as a way for a company to break down its operations into the several interrelated processes that are involved in the production of a product or the provision of a service to a client. All of the actions that fall under this category include production, shipment, and the ultimate disposal or processing of the product (Franco, 2021). Despite the fact that the notion of the value chain was first developed with the intention of making it easier to comprehend the process of value production at the level of the corporation, it has now found broad use across a variety of industries and nations. It is possible that policymakers at the highest levels and company executives at all stages might benefit from the industry-wide perspective that a value chain analysis gives when it comes to the process of formulating their policies and plans for technical advancement (Relich 2021).

Research on all of the essential elements of the value chain is required in order to make a rapid transition to a CE. You could come across instances when the terms "circular supply chain," "circular value chain," "closed-loop supply chain," and "supply chain management in a circular economy" are employed in a literal sense (Siddik, 2018). The notion of the value chain presented in this article is distinct from the conventional linear one in that it takes into account the many stages that are involved in the supply and take-back chains of the photovoltaic sector. Specifically, "all stages of the life cycle from

idea/concept, raw material sourcing, production, distribution, and end customer use to the point where the product returns to a biological or technical cycle, thus closing the loop" encompasses the whole of the product life cycle, as stated in this. Through the use of a value chain viewpoint, we were able to identify possibilities to produce value at various points over the lifespan of the PV system (Jayantha 2018).

After-sales service is a term that describes the advantages that clients get after a purchasing transaction. The level of happiness that customers feel and their commitment to a particular brand are both directly and indirectly impacted by the quality of the after-sales services that a company provides. When it comes to determining the worth of their acquisitions, customers depend on these services. The post-purchase services that are offered are a significant factor in determining the level of satisfaction that consumers have with a variety of items (Knapp, 2021). As a consequence of this, post-purchase services have become the major centre of attention in customer relationship management. In order to acquire a competitive edge, make more income, and ultimately deliver value to customers, after-sales services, which are a component of customer relationship management (CRM), are used as a non-price competitive strategy (Gomesh 2013). An illustration of this would be the fact that after the first sale, worldwide sales of goods and services account for 4% of total revenue and contribute 45% to the entire profit that firms produce (Siddik 2018). By the year 2024, it is anticipated that the value of the mobile phone aftermarket in India would have reached a projected value of \$1.1 billion. In addition, providing extraordinary service after a purchase is a great way to increase customer happiness and loyalty, which ultimately leads to organic marketing of the brand via word-of-mouth. Furthermore, the quality of post-purchase care may be a factor that differentiates one company from another (Chawla,, 2021). The brand's value and perception are both strengthened and improved as a result of this. When it comes to businesses who provide excellent post-purchase services, customers are more likely to demonstrate loyalty to such businesses. Those folks who are completely committed to a certain brand give their preferred brands more priority than other brands. One of the ways that Toyota differentiated themselves in the Philippine market was by providing exceptional after-sales services. It is surprising that just two studies have been conducted to investigate the impact that after-sales services have on customer loyalty, particularly among users of Samsung and iPhone mobile devices.

In the Indonesian market, Bayu et al. (2019) investigated the influence that after-sales service, brand image, and product quality have on the choices that consumers make on whether or not to repurchase Samsung handsets. Despite the fact that Samsung is well-known for its dependability, consumers have generally depended on aspects like as the quality of the device and the post-purchase services, which include customer support, warranty, and application help, when deciding whether or not to make further purchases. Through the application of the idea of value co-creation, Hussein and Hartelina (2021) conducted a research with the purpose of investigating the connection between customer loyalty and after-sales care for iPhones in Indonesia. It has been shown that after-sales help has both a direct and indirect influence on customer loyalty via the process of value co-creation.

METHODOLOGY

The researcher intends to apply empirical study in order to achieve the objectives which were specified in the previous section. A detailed descriptive and causal research design is applied in order to investigate the objectives which are focused in measuring the perceptions of solar rooftop entrepreneurs on raw material availability and after-sales service. The main tool used in the study towards data collection is through questionnaire, the information was shared to sample respondents and their responses were recorded. The secondary source is used to analyse the previous research and other works related to the topic and use them for preparing literature review and other aspects for the study.

Data analysis

The first steps involve in presenting the demographic composition of the respondents, for this purpose frequency analysis, followed by correlation among variables and lastly the hypothesis is tested using chi square analysis.

Table 1: Demographic analysis

Age of the respondents	Frequency	Percent
Less than 25 years	58	42
26 - 35 years	34	24.6
36 - 45 years	15	10.9
Above 45 years	31	22.5
Qualification	Frequency	Percent
Bachelors	33	23.9
Masters	57	41.3
Professional	28	20.3
Others	20	14.5
Marital Status	Frequency	Percent
Married	74	53.6
Single / Divorced	64	46.4
Type of Family	Frequency	Percent
Nuclear Family	89	64.5
Joint Family	49	35.5
Employment Status	Frequency	Percent
Full time	106	76.8
Part time	32	23.2
Annual Income	Frequency	Percent
Less than 5 Lakhs	108	78.3
5 - 10 Lakhs	29	21
Above 15 Lakhs	1	0.7
Experience	Frequency	Percent
Less than 5 years of experience	58	42
5 - 10 years	25	18.1
10 - 15 years	14	10.1
16 - 20 years	9	6.5
Above 20 years	32	23.2
Total	138	100

The research offers information that was gathered from respondents who belonged to a variety of socioeconomic and demographic categories. Now, let us examine the appropriate way to read each individual component.

The bulk of the respondents in the sample, which accounts for 42 percent of the total, are less than 25 years old, as shown by the statistics. This would imply that a significant section of the population that is being investigated is comprised of individuals who are younger in age. The second major cohort, which accounts for 24.6% of the data that was obtained, is comprised of individuals who are between the ages of 26 and 35. In the meanwhile, the percentage of the population that falls into the age brackets of 36–45 and over 45 is at 10.9% and 22.5%, respectively. The fact that there is a sizeable fraction of younger people in the sample demonstrates that the age distribution of the sample is rather diversified. As can be seen from the respondents' educational backgrounds, the bulk of the sample, which accounted for 41.3% of the total, had one or more master's degrees. All of this points to the fact that the population that was being investigated was comprised of a group of people who had a pretty high degree of education. Twenty-three percent of the population has a bachelor's degree, and twenty-three percent consider themselves to be professionals. In addition, 14.5% of the participants fall into the "others" group, which may imply that they come from a variety of educational backgrounds or have a variety of professional skills. 53.6% of the sample is comprised of individuals who identify themselves as married, making up the bulk of the respondents. Based on these results, it can be deduced that a significant section of the population that is being investigated is comprised of persons who are in committed interpersonal relationships. On the other hand, 46.4% of the sample is comprised of persons who are either single or divorced, which indicates that a significant number of the respondents are not married at the present time.

According to the findings, respondents who hail from nuclear families make up 64.5% of the sample, which is the majority of those who participated in the survey. Based on these data, it can be deduced that the majority of the family structure of the population that was assessed is comprised of smaller family units that are self-governing. On the other hand, 35.5% of the sample is comprised of joint families, which indicates that there is a significant frequency of extended family arrangements among the individuals who submitted their responses. 76.8 percent of the sample is comprised of individuals who are working in a full-time capacity, which is a significant percentage of the respondents.

Based on these data, it seems that the demographic that was investigated is mostly dependent on having a full-time employee. On the other hand, around 23.2% of the individuals who participated in the sample were employed on a part-time basis, which indicates that a tiny percentage of respondents were not working full-time. As shown by the data, 78.3 percent of the sample, which is the bulk of the respondents, have reported having an annual income of less than 5 lakhs. This indicates that people belonging to a demographic with lower incomes were included in the population that was the subject of the investigation. There was a lesser but still significant amount of participants who reported greater income levels.

Twenty-one percent of the persons who were questioned fell into the range of income that was between five and ten lakhs. Surprisingly, just 0.7% of the participants reported earning more than 15 lakhs per year, which indicates that there is a dearth of persons in the sample who have high earnings. The individuals who participated in the survey came from a wide range of professional backgrounds; 42 percent of them reported having less than five years of experience. There is a significant proportion of professionals in their early stages of their careers. Furthermore, around 23.2% of the persons who participated in the survey said that they had worked for more than twenty years, which indicates that a sizeable proportion of the people who were polled are professionals with extensive experience. There are three groups of experience according to the remaining responses: five to ten years, fifteen to twenty years, and sixteen to twenty years. There is a wide range of dimensions across the various groups, although they are all quite tiny

Correlation analysis

Table 2: Coefficient of correlations

Correlations	Availability of raw materials	Warranty of the product	Better training in using product	After sales service
Availability of raw materials	1	.912**	.840**	.909**
Warranty of the product	.912**	1	.814**	.927**
Better training in using product	.840**	.814**	1	.806**
After sales service	.909**	.927**	.806**	1

Raw material availability, product warranty, expanded product use training, and after-sales service are the four separate elements that are shown in the table, along with the association coefficients that are represented by those factors. By drawing attention to the potential connections that exist between changes in one component and changes in another, these correlations provide very helpful insights into the interconnections that exist between these variables to begin with. Based on the high correlation coefficients, it may be inferred that there are significant and unusually robust connections between every single pair of individual components. The availability of raw materials has a considerable positive association with both the product warranty (0.912) and the after-sales service (0.909). This correlation is strong enough to be considered favourable. It may be deduced from this that the likelihood of providing greater post-purchase assistance and warranty increases in proportion to the increase in the availability of raw materials. Furthermore, there is a substantial and positive association (0.927) between the warranty of a product and its after-sales service, which indicates that longer warranties are associated with after-sales service that is of a higher quality.

Furthermore, there is a significant and noteworthy association between improved product training and the availability of raw materials (0.840), as well as after-sales service (0.806). This correlation is significant but not insignificant. The availability of raw materials and the quality of post-purchase services that are offered, as well as the amount of consumer training in product utilisation, are often shown to have a positive connection with one another. However, despite the fact that it is significant, the correlation between improved

product training and warranty (0.814) is relatively lesser in comparison to other correlations, which suggests that there is a relationship between these two elements that is slightly less strong. Through these interactions, the interconnection and interdependence of the factors that are being investigated are brought to light. The implication is that efforts to improve a particular element, such as offering better training on product usage, may lead to benefits in other areas, such as the availability of raw materials or after-sales service. This was said in the context of the business world

Chi-square analysis

There is no significant relationship between availability of raw materials and efficient after sales service in Solar panels

Table 3: Chi square analysis 1

	After sales service				Total
Availability of raw materials	Strongly Disagree	Neutral	Agree	Strongly Agree	
Strongly Disagree	13	0	0	0	13
Disagree	13	0	0	0	13
Neutral	0	14	0	0	14
Agree	0	0	22	8	30
Strongly Agree	0	4	22	42	68
Total	26	18	44	50	138
Chi-Square Tests	Value	df	P value		
Pearson Chi-Square	259.546a	12	0.00		
Likelihood Ratio	214.649	12	0.00		

The availability of raw materials is obviously and immediately connected to the assessments of after-sales service that were provided by the respondents. Forty-two percent of those who participated in the survey had a strong belief that raw materials are not difficult to get. Furthermore, they are in complete agreement that the after-sales service being provided is of an exceptionally high level. On the other hand, the thirteen responses that fall under this category reveal that those who strongly express displeasure with the after-sales service also tend to strongly disagree with the accessibility of raw materials. As an additional point of interest, the results of the chi-square tests have been quite significant, which indicates that the connection between these components is important. Based on the findings of the Likelihood Ratio test (with a value of 214.649 and a p-value of 0.00) and the Pearson Chi-Square test (with a value of 259.546 and a p-value of 0.00), it can be concluded that the correlation between raw material availability and after-sales service perceptions is highly significant and is not likely to be the result of random chance. On the contrary, it suggests that there is a significant connection between these factors. This connection brings to light the need of securing the availability of raw materials in order to continue providing great post-purchase service while also maintaining the supply of such service. The likelihood of a company providing good post-purchase service to its clients is increased when the company is able to successfully manage and assure a steady supply of raw materials. On the other hand, difficulties in getting the required resources may impede a company's capacity to give fast and efficient

post-purchase help, which may result in disgruntled customers and a poor image for the businesses involved.

There is no significant relationship between warranty of the product and efficient after sales service in Solar panels

Table 4: Chi square analysis 2

	After sales service				Total
Warranty of the product	Strongly Disagree	Neutral	Agree	Strongly Agree	
Strongly Disagree	13	0	0	0	13
Disagree	13	0	0	0	13
Neutral	0	14	4	0	18
Agree	0	4	36	17	57
Strongly Agree	0	0	4	33	37
Total	26	18	44	50	138
Chi-Square Tests	Value	df	P value		
Pearson Chi-Square	256.316a	12	0.00		
Likelihood Ratio	222.344	12	0.00		

There seems to be a significant link between the ratings of after-sales service that respondents provide and their opinions of the warranty that the device comes with, which is an intriguing trend. Those who highly agree with the quality of the product's warranty also tend to strongly agree with the quality of the after-sales support, as shown by the 33 individuals who participated in this group of respondents. The thirteen respondents who strongly disagree with the quality of the product's warranty also strongly disagree with the quality of the after-sales service. This applies to this particular aspect of the questionnaire. Because of the findings of the chi-square tests that were used in order to evaluate the importance of this association, the statistical significance of this connection is further strengthened. The Pearson Chi-Square test produced a value of 256.316 and a p-value of 0.00, whilst the Likelihood Ratio test produced a value of 222.344 and a p-value of 0.00. Both tests were performed to determine the significance of the data. The results of these studies reveal that there is a very substantial correlation between the satisfaction of respondents with the quality of after-sales care and the warranty of the product.

The significant relationship that exists between the factors that drive customer loyalty and satisfaction is brought to light by this correlation. Customers not only get trust in the dependability of the product via the provision of a quality guarantee, but they also have the opportunity to anticipate the sort of after-sale service that they may anticipate receiving. On the other hand, if customers are unhappy with the warranty, it may have a negative influence on their view of after-sales support and the entire customer experience. It is possible for businesses to make use of this information in order to efficiently allocate resources in the areas of after-sales support and product warranties, therefore guaranteeing that these areas are in accordance with the particular requirements and preferences of their customers. It is possible that offering excellent quality in these areas on a consistent basis may increase customer happiness, encourage brand loyalty, and contribute to the success of the firm over the long run. As a conclusion,

the research demonstrates that product warranties have a substantial influence in influencing the way in which consumers perceive the quality of after-sales service. Businesses have the potential to enhance their competitiveness in the market and give superior service to customers if they acknowledge and address the link between the two sets of factors.

There is no significant relationship between providing better user training product and efficient after sales service in Solar panels

Table 5: Chi square analysis 3

	After sales service				Total
Better training in using product	Strongly Disagree	Neutral	Agree	Strongly Agree	
Strongly Disagree	13	0	0	0	13
Disagree	9	0	0	0	9
Neutral	4	14	5	5	28
Agree	0	0	31	27	58
Strongly Agree	0	4	8	18	30
Total	26	18	44	50	138
Chi-Square Tests	Value	df	P value		
Pearson Chi-Square	167.978a	12	0.00		
Likelihood Ratio	157.02	12	0.00		

There is a clear pattern that develops, which indicates that there is a strong link between the respondents' impressions of after-sales help and their opinions of gaining more extensive instruction in running the equipment. It is important to note that the 18 responses that fall under this category suggest that individuals who have a high confidence in the efficiency of teaching via the use of technology also often express a strong belief in the quality of after-sales service. The thirteen responses that fall into this group, on the other hand, suggest that those who strongly disagree with the quality of after-sales assistance also tend to disagree with the appropriateness of product training. The results of the chi-square tests that were carried out in order to evaluate the statistical significance of this connection provide even more support to the relevance of the connection. Although the Pearson Chi-Square test produced a value of 167.978 and a p-value of 0.00, the Likelihood Ratio test produced a value of 157.02 and a p-value of 0.00. Both of these tests were statistically significant. According to these data, there is a very substantial correlation between the opinions of respondents about the quality of after-sales help and product training.

In order to improve customer happiness and provide assistance after a sale, this organisation emphasises the need of having training sessions that are both effective and informative. It is more probable that a client base that has received enough training would have fewer issues when using the product, which will result in a decreased need for post-sales help. Comprehensive training programmes may also provide consumers the ability to autonomously fix small difficulties, so reducing the amount of stress that is placed on customer care workers and enhancing the overall efficiency of operations. It is possible

for businesses to make use of this information in order to fund intensive training sessions that equip consumers with the knowledge and abilities they need to make the most of the advantages available from their products. The cultivation of a better customer experience, the promotion of brand loyalty, and the achievement of long-term sustainable development may be made possible for businesses by aligning training efforts with the quality of customer service.

DISCUSSION

The raw material availability, product assurance, and product training are three of the most important aspects that are investigated in this paper within the context of the solar rooftop entrepreneurship framework. Because of the significant influence that these features have on the operational efficiency and levels of customer satisfaction of solar rooftop companies, it is vital for these companies to have them in order to achieve success and ensure their long-term existence. Availability of raw materials is the primary factor that plays a vital role in the solar rooftop sector. It is essential to have reliable access to high-quality raw materials for solar panels, inverters, mounting frames, and other components in order to carry out manufacturing and installation activities. This is because these components are essential to the production of solar energy. Any interruptions or faults in the supply chain have the potential to cause an increase in expenses, cause delays in the completion of the project, and even upset customers with their frustration. The purpose of this essay is to shed light on the problems and possibilities associated with creating a dependable supply chain for the solar rooftop business by examining the perspectives of solar rooftop entrepreneurs on the availability of raw materials.

Additionally, it is necessary for solar rooftop business owners as well as their clients to take into consideration the warranty that is associated with the installed equipment. Customers demand guarantees on the performance and lifetime of the equipment that has been installed in solar photovoltaic systems, which sometimes involve large initial expenditures. The manufacturer's trust in the product's dependability and durability is shown by the provision of a comprehensive guarantee, which in turn provides consumers with a sense of certainty. The essay investigates the significance of developing trust and confidence among consumers, which is critical for the expansion and continued viability of enterprises that operate on rooftops that convert solar energy into electricity. This is accomplished by conducting an analysis of the perspectives of business owners on product warranties. Additionally, the relevance of improved training for the utilisation of solar rooftop goods is investigated in the next section of the study. Solar power has a great deal of potential for the generation of environmentally friendly electricity; nevertheless, in order to successfully use this technology, a certain degree of technical competence is required. It is vital to provide sufficient training to clients on system maintenance, troubleshooting, and operation in order to maximise the lifetime of solar rooftop systems and their efficiency. In addition, consumers who are well-informed are better equipped to recognise and handle any problems that may arise, which in turn lessens the workload of after-sales support workers and raises the overall level of

customer satisfaction. The research highlights the need of increasing knowledge and disseminating information in order to raise awareness about the importance of solar energy solutions and to promote their wider adoption. This is accomplished by doing research on the perspectives of business owners about product training

CONCLUSION

In a nutshell, the research offers insightful information on the primary elements that have an effect on the efficiency of rooftop solar systems. The purpose of this research is to emphasise the considerable influence that raw material availability, product warranty, and product training have on customer satisfaction and operational efficiency. The study explores the perspectives of entrepreneurs working in the solar energy business. It is vital to address difficulties connected to the supply chains of raw materials, build solid product warranties, and offer extensive product training in order to encourage the wider adoption of solar rooftop systems, foster confidence among customers, and improve the customer experience. In order to fully use the potential of solar energy for sustainable development, it is very necessary to overcome the restrictions that now exist via continuous research and cooperation among all of the key parties present.

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