

The Role of E-Commerce and Social Sustainability in Solar Renewable Green Energy

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Abstract: -

Renewable sources has bright future as regular sources of energy diminishing year by year it is important to move towards the non-perishable source of energy. Now a days the solar energy becomes the widely used renewable source of energy as sun energy is available everywhere and use of solar energy does not cause harm to environment and human health. Government of India is supporting various scheme and policy to attract the entrepreneur to enter in renewable market. As renewable market is oligopoly market facing the tremendous competition. To attract the customer and to stand unique in this oligopolistic market various marketing strategy and business plan used by the organizations. By selling the product and services through online, vast consumer can be reached over short period of time which help to raise the turnover of organizations, so E-Commerce plays the vital role in solar business. To meet the increased requirements, opening employment from labour to high qualified people. Solar energy also helps to boost the economy. Solar energy directly and indirectly contributing to environment, society and economy. The aim is to understand the impact of E-Commerce and Social Sustainability in Solar Renewable Green Energy.

Keyword: -Solar Energy, E-Commerce, Social, Economy, Sustainability, employment, Internet

I. INTRODUCTION

Renewable sources are easily available in environment and can be used to produce the energy. The use of sustainable product is good for environment, good for health, cheaper to run, alternative to abundance sources of energy and provide more control to own energy. In this report will focus on detailed literature review to find out the available energy sources, role of E-commerce in solar sector, barriers to E-commerce, impact of solar energy on society and economy.

In Indian economy renewable energy sector growth boost up in the year 1991. Solar energy depends upon the Sun. India is getting good sunshine use of solar energy is increasing from past few years. India had installed 101.53GW solar capacity as on September 2021, which is having great contribution ~38% of

total capacity. India has upcoming future plan and looking forward about 450GW total renewable energy in this expecting solar energy -280GW which is over the 60% of total energy by 2030[28].

Renewable energy sources do not cause harm to environment and humans health and contribute to minimize greenhouse gases. Use of Solar energy is environment friendly and fossil fuels cause harm to environment and human health. Government of India is supporting various scheme, policies to support the solar renewable growth. India has the huge potential for solar energy.

E-commerce helps to organization and customer to buy and sell the product and services online. Objective of study to find the positive and negative impact of E-commerce to solar sector. Solar energy helps to create the employment, environment friendly and not hazardous to human health so will focus on contribution of solar energy to society.

II. RESEARCH METHODOLOGY

To find the current research and research gaps more than 50papers reviewed.

In primary data collection method Questionaries on solar renewable field focusing on customer, government policy, financial aspects and installer are prepared. Feedback from various solar installer for sustainable business in market contribute to research. The primary data collection methods as shown in Figure 1.

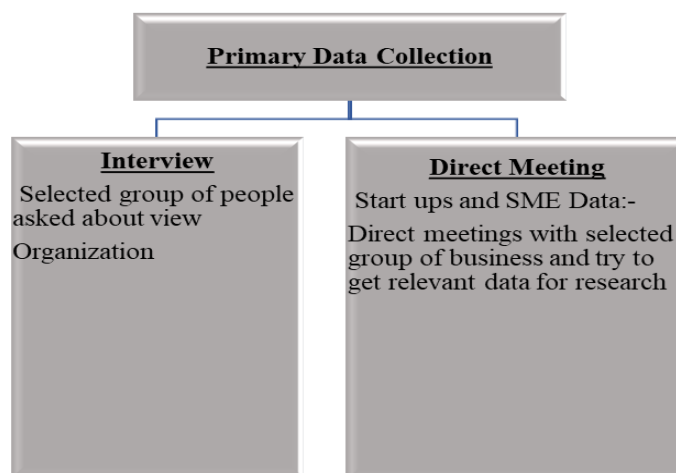


Figure 1. Primary Data Collection Methods

Secondary data considered as published data on government websites, reports, related research studies in various journals and opinion of renewable field expert as shown in Figure 2.

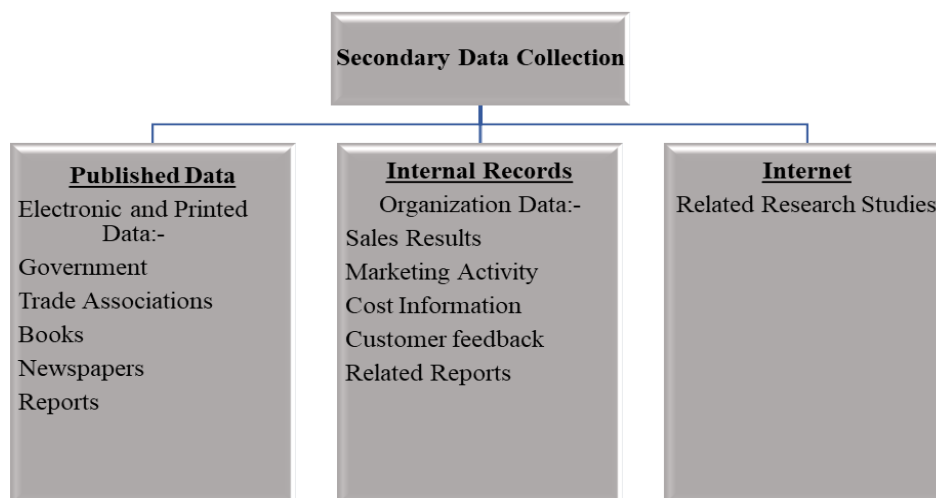


Figure 2. Secondary Data Collection methods

III. LITERATURE REVIEW

More than 50 Published paper, government websites, reports and renewable field expert opinion are considered for the literature review some of them as listed below.

- There is high potential for solar energy in India, Government is targeting 450GW from renewable sector from upcoming years this will lead to employment and economic development
- Use of marketing strategies, multimedia, customer relation management, government policies will change the perspective towards green energy and increase the solar installations.
- International Renewable Energy Agency, Ministry of New and Renewable Energy, Solar Energy Corporation of India Limited providing the upgraded information about solar installation and government policies and the energy impacts on the socio-economic development
- Solar energy is widely used in various sector agriculture for operation of pump, street lights, battery-based solution, charging stations and over the trains
- E-Commerce helps to target the global consumer and contribute to revenue of the organizations
- There are still hesitant in society towards the online purchase of solar renewable product and services as initial cost is high.
- Online business facing the so many blockades.
- Solar energy installations create the jobs to skilled to no skilled people this helps to bolsters local economy which reduce the poverty and improved livelihood.
- Solar energy helps to reduce social inequalities and gender equality.

IV. RESULT AND DISCUSSION

Role of E-commerce

E-commerce is a selling and buying the product on online, the process flow of E-commerce provides the online platform of transaction to solar business.



Figure 3. E-commerce process flow

The E-commerce process in solar business is very streamline process as seen in the Figure 3., when consumer visit the website for online purchase it is important to highlight the uniqueness in terms of quality, warranty, specification, lead time, monitoring and payment option of product /service to attract the customer and create the trust in mind. The product/Service includes individual product of system like solar panel, Inverter, battery, cables, AC and DC protection system, Earthing and Accessories or complete on grid, off-Grid, Hybrid System like 1KW ,2KW etc., Consumer either can by the individual product or complete system from supplier. Once order placed by consumer supply chain management plays the vital role to supply the system on time to customer, Installation of the system by supplier can be optional as consumer can plan installation by their end also. The demonstration of the system plays important role in customer attraction. Customer relation management is one of the key factors of increasing business as its create the loyalty and trust. Loom Solar, Amazon, Kenbrook Solar, Solar Experts, India mart are few examples of E-commerce.

Benefits of E-commerce

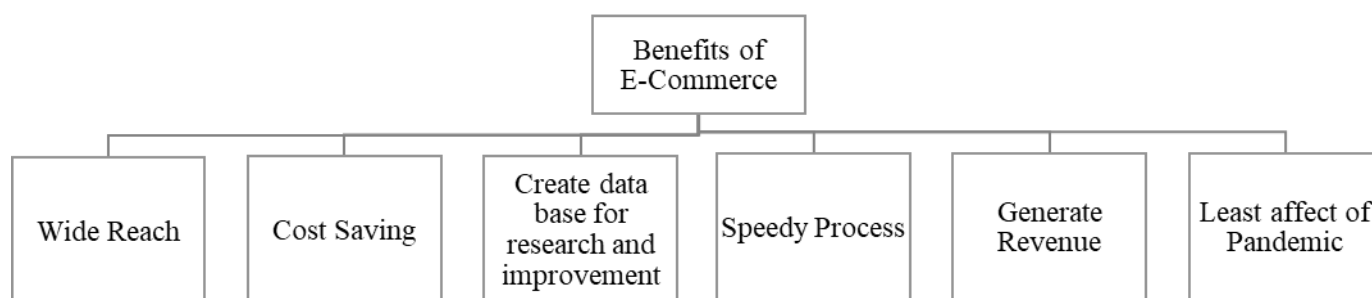


Figure 4. Benefits of E-Commerce [19][22]

Wide Reach

With the help of E-commerce global consumer can be reached, E-Commerce help to target right consumer. Even if the consumer thousands of miles away with the help of E-commerce can be targeted, it is important to have strong logistic and supply chain management system [19].

Cost Saving

In usual sell there are various steps involved to get the order like site visit, system workout, costing, proposal making, submission, number of customer visit and so on. Due to this lot of pre-order expense occur to organizations. After giving valuable time sometime order loose by organizations which cause the loss to the company in terms of money as well as time. But in case of E-commerce these steps are skipped which helps in cost saving to organizations.

Create data base for Research and Improvement

E-commerce create the data for system comparisons for organizations. Companies can check the other offering, their product or service price and specification. Which helps to make improvement in product and service also to stand unique in market and improve the marketing strategies.

Speedy process

In usual sell there are numerous steps involved from submitting proposal to getting order, but in case of E-commerce this step gets skipped, which makes the process faster than the usual.

Generate Revenue

Practically it is impossible to target the consumer globally and remotely but E-commerce create the platform to reach the right consumer at right time. E-Commerce develop the customer base without making the much efforts and contribute to the revenue of the organizations.

Least effect of Pandemic

During pandemic situation peoples afraid of steeping out. Currently there is low risk as compared to earlier situation in year 2019-20, but we can't deny such situations in the future so it is important to look the alternate solutions where consumer can look at available solutions just sitting at home, here E-commerce plays the important role to find the require system just sitting at home and even they can compare the available product or services available in the market [22].

Barrier to E-commerce

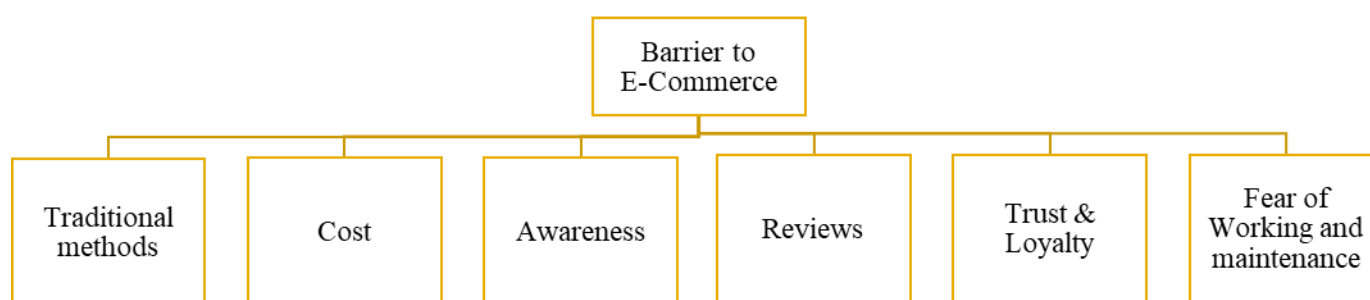


Figure 5. Benefits of E-Commerce [24][25][26]

Traditional methods

Consumers still feel traditional approach is very convenient way of energy. In case of google search for product and services, E-commerce provide the thousands of options, checking such result becomes exhausted as most of the time consumer is unaware about technology of product and services. where in usual selling customer can have the face-to-face interaction with service provider and can gain the information about product and services [26].

Cost

Initial cost of the solar renewable projects are high as compared to conventional energy system, maximum return of the investment period for the solar is 3-5 years approximately. There are some customers where they are not paying the electricity bills after installing the solar system. Due to initial high-cost customer are hesitate to install the solar renewable system.

Awareness

Still there is less awareness in the society about the use of renewable product. Government is planning to increase the energy from renewable sources and providing the subsidies to solar projects. But most of the consumer are not aware of such policies and subsidies. Social media, marketing strategies will help to create the awareness in the society [3].

Reviews

In case of the E-commerce, people can submit the reviews about the product and services. There are some people who intentionally give the negative feedback. Looking such comments make the dilemma in the customer mind weather to buy this product or not from this company [25]. This create the benchmark to selling of product and services.

Trust and Loyalty

Many people wary and not feel secure about giving the personal information online. They feel not secure to share personal data and feel it may be scams.

Fear of working and maintenance

As initial cost of system is high peoples are afraid of non-working of system after installation. They are thinking if the system is not working who will the responsible system installer or need to call the product manufacturer. So, there is still fear of working and maintenance of system in the customer mind. If product is not working weather the installer is take by what will be return policy or will I get my refund back if such case arises [26].

Impact of Solar energy on social sustainability

As solar installations are increasing year by year to meet this requirement, its opening doors to employment in field of design, marketing, project management and maintenance. As per latest report of NRDC, CEEW and SCGJ, As India is targeting goal of 500GW of non-fossil energy source of energy by 2030 this will create the employment opportunities in solar and wind energy. This will lead to improving livelihoods and reduce environment pollution and will support India to achieve employment and environmental goal. Roof Top Solar and Utility scale solar contribute 77% market share in year 2021[10].

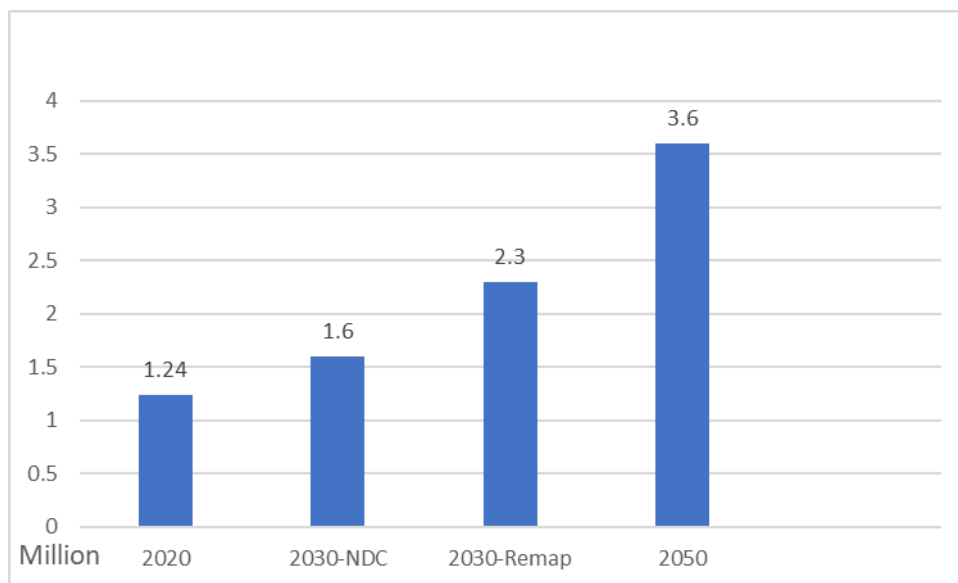


Figure 6. Employment opportunity [27]

NDC: Scenario that highlights the strategies necessary for achieving the targets laid out in India’s International climate commitment (NDC)

Remap: High ambition renewable energy roadmap for India by the International Renewable Agency (IRENA)

With reference to the feedback received from various installer and experts’ opinions impacts are listed in the Figure 7 and Figure 8.

The uncultivated land, deserts land can be used to install the solar project which start the source of the income. Existing roof area of buildings and houses can easily use to generate the energy,

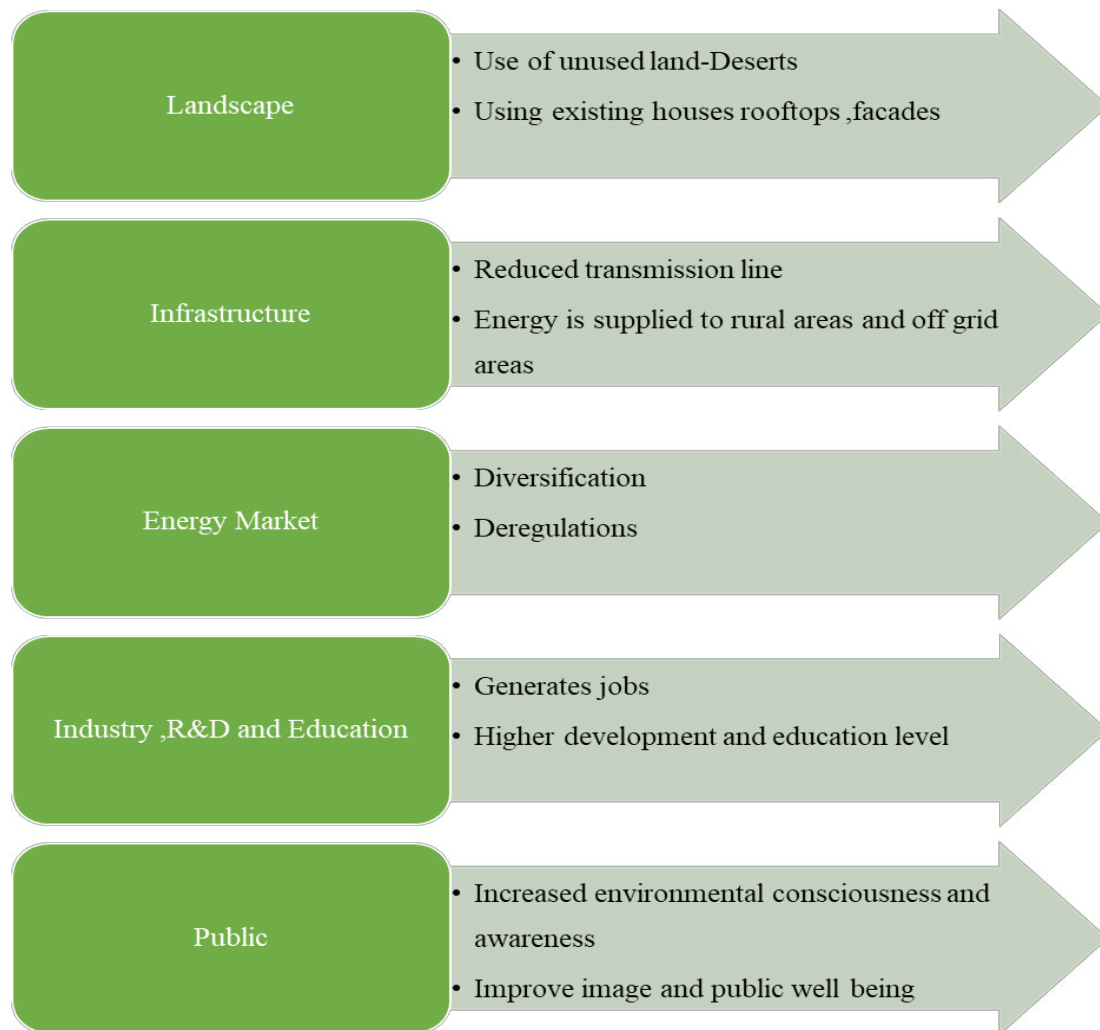


Figure 7. Social impact of solar PV installation

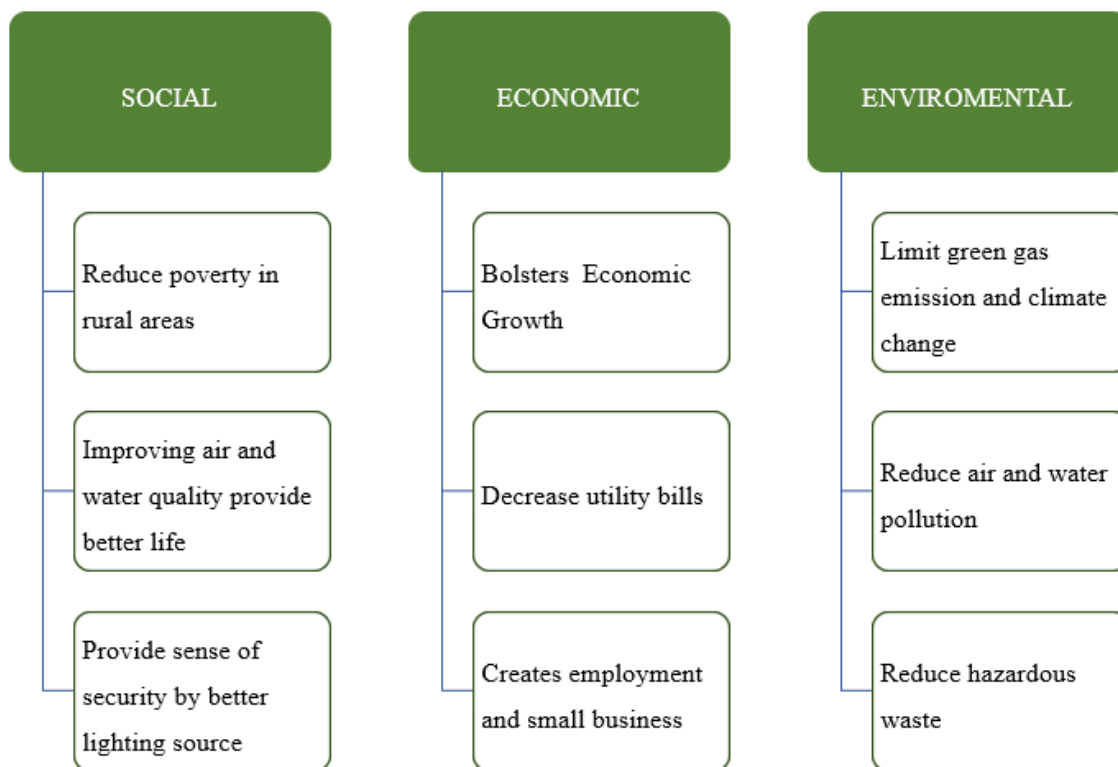


Figure 8. Social, Economic and Environmental Impact [9]

There are remote area where trnsmission lines installation are difficult and expensive ,such area solar installation plays the vital role. Off grid or battery based solar system can be installed at such areas. In remote areas installation of solar projects generate the local emplyoment in the sector of mainatenance which helps to reduce the poverty and improve the economy.Use of renewable source helps to mimimize the water and air pollution and does not cause the harm to human health.The solar energy directly and indirectly contributing to society, economy and enviromment.

V. CONCLUSIONS

India’s Solar market has huge potential in upcoming decades. E-Commerce creates a platform for customer and organizations to buy and sell the product and services online. E-commerce plays the vital role in targeting global customer, saving time, money and contribute to generation of revenue. In pandemic situations with the help of E-commerce is still possible to run the business as no need to meet face to face to customer or supplier. But still organizations facing some barrier in online business-like creating trust in customer mind, huge competition, cost and negative feedback.

Solar energy helps to reduce carbon emissions and air pollution, load on local grid reduced and contribute to save energy, which provides the social sustainability. Government of India setting new renewable target for upcoming years, to meet the demand, the workforce required in manufacturing, design, installation and maintenance sector will increase. This bolsters the local economy.

We can say E-commerce is playing the vital role in pandemic situation and renewable online business barrier can be minimized with the help of marketing strategies. The solar energy plays the key role in boosting economy, development and provide social sustainability in India.

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