ENFORCEMENT OF ACCESS TO EFFECTIVE TECHNICAL SUPPORT SERVICES IN THE KENYAN SOLAR ENERGY SYSTEM

ABSTRACT

It is clear that energy is the prime mover of development cutting across industrialisation, manufacturing and residential consumption. Recently, Kenya, being ranked high among the most developed countries in Africa, has mapped way for embracement of renewable energy technology with increasing debate on sustainable development and environmental issues associated with fossil fuels, as the prime energy sources.

This paper aims at investigating the leading role of access to viable technical support services in mitigating solar energy adoption challenges.

This paper will focus on challenges faced by small and medium sized consumers in search for technical advice and support prior to purchase, during installation and after purchase and installation stages. The research will conduct survey via questionnaries, analyze data obtained, identify technical support factors in order of priority and give adaptable recommendation for the state in ensuring that solar projects are sustainable and that customers find value for their money.

KEY WORDS:

Renewable energy

Solar energy

Technical support services

INTRODUCTION

Solar is the centre of renewable energy as all other forms directly or indirectly rely on it. This outlines its great potential as a source of energy, hence why its adoption should be seriously considered. Of the key challenges of solar reliability is the low efficiency and the low

potential of latitutes. However, Kenya, laying along this region has a very wide-scale potential since daily solar irradiance is almost constant all year round. There is a unique nature of regions along the equator to maximize on solar energy as obserbed by (Kabir, Kim, & Szulejko, 2017).

Adoption and development of solar energy in kenya is greatly challenged by non-standard solutions and service providers. Customers are not able to get value for their money thus loosing trust in this particular technology.

Lampinen (2018) expalined that technical quality (value and budget) in external engineering support depends on three major factors refered to as the PPT (people, process and technology). This paper will forcus on the first two, in regard to third-party inspection and verification, as follows:

1. People: quality technical work requires technically qualified personels. The government ought to strengthen the specific qualification and creditials for people engaging in solar works that clients must look at before engagements. The government can source for such experts and deploy them to county levels for easy accessbility. Serious measures must be taken against violators.

2. Process: come up with well designed execution framework that will focus on client diversities. The latter should foster excellent technical communication between the client and service provider. Service providers must understand that solar projects are basically outsourced services by clients, who are prone to both technical and operational difficulties and other perfomance related problems. They must then have customer resolution processes at hand.

With public education on solar energy, embracing the technology has not been a big challenge recently. Firms have also come up to finance solar energy adoption. In 2018, the Kenyan government in collaboration with World Bank, KPLC and REA deployed county renewable energy officers to 14 counties in attempt to balance access to affordable energy across the country. In 2018, electricity prices shot up and later on, VAT was introduced on petroleum products. Recently, prices have continued to shoot as announced by Energy Regulatory Commission in April 2019. As a result, cost of life has increased considerably and it is evident that the trend will not reverse in the future; instead, it will get worse.

Consequently, it is the high time scholars and specialists dug deeper into the issue to get a reliever solution.

Studies to reveal solar energy drawbacks in africa revolve around four factors, with Kenya not exceptional. Affordability and access to finance support was lanked the first challenge. Other challenges outlined by studies are enabling environment, technical support services and awareness (Da Silva , 2016). However, with several institutions understanding solar projects and offering required initial support, it seems the latter is more less a big challenge. The solar industry has become very competitve but one thing supplier lack in common, is proper technical support services thus lowering interest and confidence of customers on the technology.

The government must strategise on how to provide customer advisory, both technical and financial, prior to puchasing, educate the society on project handling and usage as well as engage them in after sale services. Customers want to see value for their money which could be through personal investment or taxes paid. The latter has not been the case, with suppliers competing to win tenders and there after turning their backs on clients once they receive the payment. No one cares to find out how the projects are fairing. Others never respond to client problems arising there after. As a result, very needy clients end up making a repeat purchase from a second supplier while others completetly abandon the concept and emback on their earlier methods. If only the industry players came up with a management and monitoring policy where supplier are forced to provide quality technical support services, the above menace would be completely handled. The latter has proved possible in other fields such as the health sector. Specialists must be accountable for their engagements. The aseessment in this paper matches that observed by (Kabir, Kim, & Szulejko, 2017) in a case study in Bangladesh whereby the author argued that stake holders need to strengthen after-sale services for ensured sustainability.

RESEARCH DESIGN

Due to the diversity of our government and the constitution, the research should be effective in terms of respondent randomness and time if the study concentrates on a single county, away from the most developed counties. It must be a county where a better half of its

population lacks access to adequate grid power. This will be a representative county for this case.

The researcher should conduct general public awareness training through methods that will be considered available and most effective such as public meetings. It will then invite respondents from a chosen demography who will provide reliable feedback (either verbally or by filling the forms and returning them). Most preferred are individuals aged between 18 and 70 years, mostly targeting the educated and those with knowledge of the new technology developments worldwide. Both male and female respondents would be considered and randomly chosen.

The researcher may choose to use survey questionnaires on the representative county, on technical support services in terms of awareness, availability, accessibility, competency, affordability, accountability, reliability, appropriateness, continuity, acceptability, timeliness, accuracy, attentiveness, comprehensiveness and responsiveness. However, this paper will focus more on the 4 most essential factors of the latter.

RESULTS/ FINDINGS

FACTOR CONSIDERED

1. Awareness

The general citizens of underserved regions are less aware of new energy technologies and have very limited engagement capacity in renewable energy and other off-grid electrification programs. Around 35 per cent of the people I engaged with are aware on solar energy existence but do not have much knowledge of how it works. 80 per cent of the 35 per cent above are in the youth bracket with less than 20 per cent being women. Extensive citizen engagement and capacity building is required. This could be through respective county planning or via consultancy plans so as to help identify skills, resources and necessary coordination to meet the growing energy demand.

2. Availability

Among the technologies, solar energy was the most familiar. Despite some citizens being aware of renewable energy technologies, they still faced a major challenge of investors and technical experts being unavailable for reach and consultation.

Renewable energy technology experts were found to be concentrated within certain areas and more sore counties/ regions within Nairobi, Rift valley and the lake regions. These are the same regions with easy access to grid power. However, regions that are more desperate for power and those in underserved counties were less covered by private investors more sore due to low infrastructure developments, long travel distances and insecurity issues.

3. Accessibility

Among the communities with existing solar energy projects, a common problem was accessibility of technology specialists to assist them whenever the projects had challenges. Some knew contact people who however, were not able to render their services in good time. As a result, the projects took long to get maintenance, thus sometimes completely destroying some components such as pumps and batteries. Consequently, this killed customers' trust in the technology.

4. Competency

The few technical assistance specialists available were averagely competent as they managed to sort most of small and medium challenges effectively. However, high level problems such as solar water pumping solutions remained a challenge to many.

5. Affordability

After sale customer services were very high. This could be possibly by providers setting their services cost very high thus exploiting the clients, instead of maturing the technology.

In conclusion, it is evident that lack of above factors have caused technical failure, reduced customer trust in the technology as well as scared off of potential customers and investors.

DISCUSSION

1. Awareness

Citizens have the right to know of any advances in technologies in energy and expect to be presented with clear and timely information about the advantages and disadvantages of such technologies.

2. Availability

Citizens have the right to know how to access energy technology advances. This requires the service providers to adequately interact with the clients to share their concerns, challenges and any feedback on the technology or any services provided to them. Services providers should be readily available to offer customer guidance on how to achieve maximum benefit from their solutions and technologies. Operations and maintenance issues must be adequately addressed.

To address the latter, it is advisable for organisations and suppliers to do skill training to part of the community members as part of Customer Social Responsibility. Those already with such skills and coming from such communities could also be hired to encourage development of these technologies as well as offer consultancy services on the same as well as maintaining existing systems.

3. Accessibility

A good portion of energy-desperate communities have expressed their interest in solar energy technologies and their willingness to accept and support the innovation. The administration is much willing and supportive of the idea. They are willing to pay for effective products and services and thus require both pre-sales and after-sale services to be readily available and accessible.

4. Competency

With quite adequate familiarisation with solar lighting solutions, competence in solving related challenges is averagely high. However, we need to equally invest in solar water and energy expertise. This could be achieved via specialised partnership and training with key stakeholders in the sector such as water and energy appreciation courses offered by Davis and Shirtliff, a key player in Kenya in water and energy solutions.

5. Affordability

There has a common trend where after sale expenses are considerably high when offered by a party different from the initial product supply party. This is commonly because each party wants to reap maximally from their services. This is the opposite when the initial product supplier has a maintenance contract for the product supplied or when the supplier is responsible for after sale training either to the product owner of in form of CSR whereby operation and maintenance skills are passed to the community members.

CONCLUSION AND RECOMMENDATION

It is recommended for the government to establish enforcement and monitoring unit that ensures organisation and individuals provide effective coordination for their products from pre-purchase to after sale developments. This would accelerate absorption of solar energy and present an opportunity for large scale solutions such as solar minigrids, solar water pumping, solar water purification as well as solar water treatment technologies. The latter stand great opportunities in underserved countries such as those along the coastal region and Arid and semi-arid areas that have good basis of underground water and saline waters.

REFEREES

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ILLUSTRATIONS (figures and tables)

Table 1: Survey questionnaire

Section I: Introduction

The survey purposes at understanding technical customer support motivation, benefits and challenges perceived by individuals/ bodies regarding adoption of solar energy systems in Kenya. An estimate of 1000 surveys was targeted. Allowed responses were physical and electronic modes only. All responses were checked to ensure there were no duplicates.

FACTORS CONSIDERED IN THIS PAPER

1. Awareness
2. Availability
3. Accessibility
4. Competency
5. Affordability

Section II: Demography-respondent background information

	Questions	Options	Noes/Comments
1.1	Name of the Respondent		
1.2	District name		
1.3	Respondent's Address and Contact Details	Mobile: Email (if any): Postal Address:	
1.4	Locality	1. Urban 2. Rural	
1.5	Type of Respondent	1. On-grid Consumer	

		2. Off-grid Consumer	
1.6	Category of Respondent	1. Domestic 2. Commercial 3. Agriculture 4. Industrial 5. Any other, please specify__	
1.7	Respondent's Gender	1. Male 2. Female	
1.8	Literacy level of the respondent	1. Uneducated 2. High school 3. Below graduation 4. Well qualified (Diploma, Masters, etc.)	
1.9	Monthly income Ksh.	1. Between 0- 10,000 2. Up to – 25,000 3. Up to – 50,000 4. 3. Up to – 100,000 5. 3. Up to – 200,000 6. Above 200,000	
1.10	Occupation	1. Unemployed 2. Self-employed 3. Government service	

		4. Private service 5. NGO worker 6. Others (Please specify) __	

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	Questions	Options	Notes For Surveyors/ COMMEN COLUMN
2.1	Awareness: Have you heard of Renewable energy? Have you heard of Solar energy?	1. No 2. Yes 1. No 2. Yes	Renewable energy is energy that can be used without depletion. Solar energy is energy obtained from the sun, via irradiation reaching earth's surface and can be used for lighting, heating water, cooking and powering equipment.
2.2	Availability: Do you know someone using solar energy in your locality? Do you know any solar experts (individuals or companies) available in your locality? Have there been any efforts (individual or government) to make the technology available to the residents?	1. No 2. Yes 1. No 2. Yes 1. No 2. Yes	 If 'Yes', proceed to Q. 2.3 If 'Yes', proceed to Q. 2.3

2.3	Accessibility: Are you able to reach the experts for assistance? Are the experts friendly, concerned and approachable? What is the minimum time you spend to get to their locations? When experts are available, how much time do they take to respond to your problems?	 1. No 2. Yes 1. No 2. Yes 1. Travel 2. Phone call 3. Randomly within the area 1. Within 2 weeks 2. Months (_) 3. They never turn up	
2.4	Competency: If experts turn up, Do they offer quality services? Do they complete the task in considerable time or tasks are postponed and prolonged? Do they offer you technical advice on the system?	1. No 2. Yes 1. No 2. Yes 1. No 2. Yes	
2.5	Affordability: For new systems: Do you feel the prices charged are fare compared to the solution	 1. No 2. Yes	

	offered? Do different experts offer same range of prices? Do you feel overcharged or manipulated by service providers? For existing systems: Are the repair/maintenance costs considerable compared to purchasing an entirely new system?	1. No 2. Yes 1. No 2. Yes 1. No 2. Yes	
	FINALLY, WOULD YOU RECOMMEND SOLAR ENERGY SYSTEMS TO NEW CLIENTS?	1. No 2. Yes	EXPLAIN WHY:

THANK YOU FOR YOUR TIME AND COOPERATION

Date of the Interview: _____

Signature of the Respondent: _____