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Household Solar Photovoltaic Adoption in the Maldives: A Socioeconomic Perspective

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Abstract: Energy has become an essential part of our lives, but the current energy sources we used are depleting and non-renewable. In the case of Maldives, fuel energy is expensive due to importation and high transportation cost. Besides, Atoll islands' characteristics require each island to have a power plant using fossil fuel, and the fuel storage availability is limited, making the electricity in these islands unstable and costly. Therefore, the need for cleaner and reliable resources for energy is essential in order to ensure a better future. This study aimed to determine the factors influencing solar energy acceptance by inviting people to participate in the electronic survey in the Maldives, with 119 samples collected. The result revealed that most respondents were willing to go for a solar energy source for electrification due to the current high electricity bills. A binary logistic regression analysis was performed to predict the factors for the acceptance of solar energy. The result showed that people's attitudes and current electricity bills were significantly influential in solar energy acceptance. The presumptions for policymakers are to increase the people's knowledge and awareness to elevate a positive attitude and involve the private sector to increase competition and utility in the field.

Keywords: Solar Energy; South Huvadhoo Atoll; Maldives; Electrification
JEL Classification: Q42, Q56

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Introduction

Energy is a key factor in the development and progress of a nation. However, the use of fossil fuel to produce energy hinders the nations' development. The resources used are not replaceable and limited. Further, the increases in population and technology improvement have led to accelerating demand for energy. The excessive use of fossil fuel has also caused global warming and health problem for the world population. The climate change effect on the earth due to increasing pollution and CO2 impedes every nation's development. Therefore, many countries are now seeking alternative energy such as solar and wind, which is unlimited and renewable, to substitute for the non-renewable energy generating resources. The clean sources of energy help minimize pollution and zero-emission. It ensures the stability of energy prices, and once installed, the production costs are low. Moreover, it gives domestic energy security through a reduction in dependency on imported fuel sources (Kusch-Brandt, 2019).

The Maldives is a coral island country consisting of 1,190 islands scattered around 298 km² area separated by sea. The country does not have any conventional energy sources, and the primary source of energy is petroleum. The power systems rely on imported fossil fuel. Maldives' electricity supply is inefficient and unreliable. The limited capacity of oil storage facilities limited the bulk purchasing of oil when the price is low. The country spent almost 30% of its GDP on the import of petroleum. The share of petroleum products in total imports rose to 29% in 2014, from only 16% in 1990. The Maldives spent $572 million on imported fuel, 33%, or roughly 19% of its GDP in 2014 (MMA May 2015). In order to make electricity affordable to all, the government has to give subsidies. However, subsidies increase year by year, and it has become a big burden on the Government budget. The total cost of subsidies in 2010 was around US$ 5 million, and in 2015, the government spent US$46 million as subsidies (Ministry of Environment and Energy, 2014b). Maldives was among the highest cost of electricity generation in South Asia- 30-40 US$ cents per kWh in the larger islands, and even higher in the small remote islands (Asian Development Bank, 2014).

In the Maldives, three companies provide electricity for the whole country. The State electric company private limited provides electricity to 13 islands (these 13 islands are referred to as Greater Malé regions), the FENAKA cooperation supplies electricity to 149 islands around the country, and the Maldives water sewerage company affords electricity to 1 island; it is mostly renewable energy. The remaining islands get electricity from a local powerhouse managed by the island council. According to the Energy Demand and Supply Report, there was an increase in energy consumption (MWh) of the Greater Malé regions and other atolls from 2010, 2011, and 2012. It indicated an increase in the growth rate of specific electricity consumption (Kwh/capital) in Greater Malé regions from 4.13% in 2011 to 6.09% in 2012. Besides, there was an increase in the estimated electricity consumption in other atolls from 2010 to 2012. The annual growth rate of electricity consumption was 21% (Ministry of Environment and Energy, 2014a).

For the Maldives, going for renewable energy is not only a matter of protecting the environment but also for the country's physical and economic conditions. It is essential that the country must have stable electricity without depending on other countries. To prevent the complete black down of the country and to have a stable economy, the government is working on different policies and strategies. According to Government policy 2015, the country gives importance to providing reliable and sustainable electricity service, and it aims to achieve 30 percent of the daytime peak load of electricity in all inhabited islands from renewable energy sources by 2020. In order to achieve these targets, the country implements different solar energy projects in different islands (Ministry of Environment and Energy, 2016). The resorts are revolving into clean energy sources for its production. Under different projects, seven islands have installed solar photovoltaic systems. They are DH Kudahuvadhoo, G DH Thiandhoo, villi male', Hulhumale, V Rakeedhoo, and A DH Dhidhoo. Besides, a resort named Gas Finolhu is a 100% clean energy resort, and other resorts produce some percentage of electricity using clean energy. The project named Maldives climate change trust fund, which is supported by Asian Development Bank (ADB) clean energy for climate mitigation project was implemented in G DH (South Huvadhoo) Thinadhoo Island, where 558wp solar PV system

was installed. The project produced an electricity supply of 300MWh annually from renewable energy and carbon emissions avoided of about 180 tCO2 (Amara, van der Veen, & Bloembergen, 2011).

However, to become completely independent in solar energy for electricity production and reduce the electricity production cost, the country needs the population's participation (Ali, Shafiullah, & Urmee, 2018). It is essential to adopt solar energy at the household level to reduce the burden of electricity costs. To promote renewable energy (RE), the government has launched a Net Metering regulation that privately produces renewable electricity energy, which can be connected to the utility power grids. The Maldives bank has also introduced a Green fund for clean energy initiatives (Maldives Energy Authority, 2015). In this regard, being a tropical country, out of all RE resources, solar energy is easily applicable. Solar energy means energy created using sun radiation. Solar electricity/power is produced by converting sunlight into electricity directly or indirectly using photovoltaics (PV) and concentrated solar power (CSP).

The electrification with solar energy, either PV or CSP, increases with the increasing demand for renewable energy, which concerns the world climate. Three percent of the world's electricity generation by 2019 was covered with photovoltaic energy (International Energy Agency, 2020). Over the past decade, solar energy cost fell, and its installation would be less expensive for households. This cost reduction has greatly impacted encouraging residents to accept electricity using solar energy (Mohandes, Sanfilippo, & Al Fakhri, 2019; Wong & Cronin, 2019). Installing solar electric technology in a household would lead the other neighborhoods following the same action due to the peer effects even across the municipalities (Graziano, Fiaschetti, & Atkinson-Palombo, 2019; Lan, Cheng, Gou, & Yu, 2020).

Demographic characteristics, such as education, age, and income, are the influential factors of the solar home system products' awareness (Urpelainen & Yoon, 2015). Further, Wang, Guan, and Wu (2017) added geographic factors, household attributes, and respondents' perceptions and attitudes to predict the willingness to adopt and use solar energy decisions in households. They chose the study area in Jiangxi Province in China with an in-person interview with 1,000 random rural residents. Using probit regression analysis, they found that willingness to adopt was more influenced by geographic factors and household attributes and that resident characteristics were associated more with the usage decisions. Some subsequent studies documented similar results supporting these variables relationships. Household head with higher education, higher income, positive attitude, younger age, wealthier, and being female, respectively, resulted in higher adoption of solar energy in household electricity (Aklin, Bayer, Harish, & Urpelainen, 2018; Guta, 2018; Kurata, Matsui, Ikemoto, & Tsuboi, 2018; Rahut, Mottaleb, Ali, & Aryal, 2018). According to other studies on knowledge, attitude, and decision by O'Brien (2007) and Zyadin, Puhakka, Ahponen, Cronberg, and Pelkonen (2012), it is essential for improving people's knowledge and school curriculum to accommodate the lessons of environmental literature and renewable energy. Meanwhile, initiation and participation from the private sector and the public are also essential.

Besides, evaluation of the drivers of solar energy adoption was extracted by Wong and Cronin (2019) into five general aspects classification. It included financial, social, technological, governmental, and environmental aspects. They compared the mean score of respondents' degrees of agreement on the drivers and outcomes of solar PV projects and then analyzed the data with entropy ranking analysis. Their findings pointed financial and environmental as the most effective aspects in promoting the uptake of solar PV projects, despite previous studies suggesting that environmental values alone were neither enough nor always necessary to motivate solar electric technology adoption (Schelly, 2014). Governmental aspects were found to be less effective to stimulate solar energy adoption, although more discussions (Inderberg, Tews, & Turner, 2018; Parsad, Mittal, & Krishnankutty, 2020; Qureshi, Ullah, & Arentsen, 2017), in contrast, have asserted that government had a strong impact through subsidies or energy policies to intensify solar energy investments.

Furthermore, Pearce, Markandya, and Barbier (1989) introduced the blueprint for a green economy subject to sustainable development as a legacy for the future. They relied on the fundamental understanding that "the economy is not separate from the environment in which we live." This interdependence further will generate growth and sustainability, implicating the need for regulatory policies. Besides, United Nations Environmental Program (UNEP) has defined the green economy as "one that results in improved human well-being and social equity, while significantly reducing environmental risks and ecological scarcities" (UNEP, 2011). Green economy nurtures countries' performances through renewable energy utilization while ensuring sustained live for the future generation. Renewable energy usage still covers a small share of the total supply globally, although the number has been increasing. Most of the increase will likely come from solar, wind, and hydropower (Kusch-Brandt, 2019).

However, there is a dearth of literature on the determinants of household solar energy adoption acceptance in the Maldives. The explicit statement of research objectives also covers existing research gaps and seeks solutions to phenomena that occur. If deemed necessary, it also explains the difference between this research and the previous one. Since solar power usage becomes one that will increase on a global scale, this can be impactful for the Maldives to which they adapt for renewable energy uptake. Thus, people's attitudes become vital to exhibit the country's current position and readiness to accept solar energy. It is not a new thing in as much as Sustainable Development Goals (SDGs) have got underway, involving the concern for renewable energy or green economy. SDGs' implementation relies on people's awareness and knowledge that strongly relate to information accessibility, and the population inclusion can start through educational settings (Annadurai, 2020; Jati, Darsono, Hermawan, Yudhi, & Rahman, 2019). Participation from the country's population is necessary because the users are not merely consumers but also successors and role models for others. Besides, self-consumption has been an essential market driver for the new distributed systems (Kusch-Brandt, 2019). It is impossible without knowing whether people are willing to accept it or not. Therefore, the present study establishes an exploration of solar energy acceptance, specifically for household utilization in Huvadhoo Atoll, Maldives.

Research Method

This study used a quantitative research method to analyze the primary data from an online survey. It was conducted in South Huvadhoo Atoll in the Maldives, where there are nine uninhabited islands with a population of 11,587, and the number of households was 2,186 (Maldives Bureau of Statistics, 2014). The data were collected through an online survey in two months from June-July 2016. As a result, there were 119 respondents participated in the electronic survey. Stratified Random Sampling method was employed due to the population's division into nine different islands. Moreover, it ensured that each island within the population received proper representation within the sample. The sample frame was the residence registration list of each island.

The survey questionnaire consisted of dichotomous, and the Likert scale type questions were utilized. The dichotomous type of question is where respondents have only two choices (Yes or No) (Akinwale, Ogundari, Illevbare, & Adepoju, 2014) to determine whether they agree or disagree on a specific statement. The Likert scale questions were formulated as three scale questions. The study aimed to find the respondents' perception, not the degree of their perception. The questionnaire was made after key informant interviews with officers. The questionnaires were constructed in the google form and were distributed to these islands through the internet.

The knowledge of solar energy was tested using 26 questions. The score was computed by adding all the "yes" answers given by the respondents. The sample was categorized into two classes named high level of knowledge and a low level of knowledge. The respondents who scored more than 13 (13/26) were categorized as having a high level of knowledge and vice versa. As for the question on attitude evaluation, the answers were scaled with three scales; agree, neutral, and disagree. If the respondent agrees with the matter, the score (2) is given, (0) for disagree, and (1) for neutral. A score of each question was computed by adding for all seven questions of each respondent. The highest score that could be obtained was 14 from 7 questions. The respondents that scored more than seven are classified as having a high level of attitude and vice versa.

Table 1 The Variables Used in Binary Regression

Variable		Type	Description of estimated variable	Expected sign of estimated variable
Y	Independent Variable			
	Accept	Binary	0 Not accept	
			1 Accept	
	Dependent Variable			
X1	Prefer Renewable Energy source of energy	Binary	0 No	+
			1 Yes	
X2	Electricity Bill	Binary	0 Less than $50	+
			1 More than $50	
X3	Attitude score	Ratio	Number	+

The electronic survey was purposively provided on nine islands for two months (June-July). Once the data were collected, the statistic package SPSS 20.0 was utilized to conduct descriptive statistics, Chi-square test, and binary logistic regression, examining the factors influencing solar energy acceptance. The chi-square test is an association test. If the p-

value is less than 0.1, then the null hypothesis will be rejected, and the variables have an association with each other. It should be mentioned that although many different demographic and socioeconomic factors were examined, in the following analysis, only statistically significant results (p-value = 0.1) were taken into the regression model. The factors influencing Solar Energy Adoption (Y) in the Maldives can be formulated by the following equation:

$$Y = \beta 0 + \beta 1\ X1 + \beta 2\ X2 + \beta 3\ X3 + e$$

Information:
Y = Acceptance of Solar Energy Adoption
X1 = Sustainable Energy Preferences
X2 = Electricity Bill
X3 = Attitude Score

Result and Discussion

Descriptive Statistics

One hundred nineteen people participated in the online questionnaire survey from nine islands, with 52.1% of the respondents being women. The respondents' average age was 37.11 years (median: 34, min: 20 max: 76). The majority of the respondents held a Certificate or Diploma (32.8%). As for occupation, 39.5% of the respondents were government officers. Regarding the income, 26.1% of respondents got a salary higher than USD 800, followed by 25.2% of respondents who earned income between USD 401- USD 600. The average income earned by the respondent was USD 575.5 per month. As per the question of whether the respondent was an environmentally concerned person or not, 60.5% of people stated that they were concerned about the environment (Table 1).

Household electricity situation showed that 46.2 % of households shared the electricity bill, but the average household electricity condition was one house having more than one meter in the house. In terms of electricity bills, 38.7 % of the households had bills under USD 50. Average of respondent household was USD 90.6 (median: $67, min: $ 3, max: $1000). While 71.4 % of respondents stated that their electricity was stable, 84.9% of respondents were not satisfied with the electricity prices. Out of 119 respondents, 95% of people preferred to have a renewable energy source for electrification (Table 1).

A set of questions to examine the knowledge level was included in the questionnaire. The question was categorized into five sections testing the environment and economic benefit of solar energy, promotion carried out by the government, household gain, and national-level solar energy benefits. The questions were asked on a dichotomous scale (yes/no). Computing up all the respondents' answers, a total score was generated, indicating that the respondents' average score was 16.5

(median:17, min:6, max:26). Furthermore, respondents who scored more than 13 were categorized as having a high knowledge level. 68.1% of respondents had high knowledge about solar energy (Table 2). The questionnaire's attitude section dealt with government goals, solar for electricity, government promotion, and financial, technical, and social difficulties. A sum-up score was calculated based on three scales, which indicated that the respondent's average score was 7.16 (median:7, min:2, max:14). Besides, 59.7% and 40.3% were classified as high-level attitude and low-level attitude respondents, respectively (Table 2).

Table 2 The General Characteristics of The Sample

No	General characters	Mean	Categories	Will you use solar energy?		Asymp. Sig. (2-sided)
				No	Yes	
1	Age	37.11 years	35 below	7	61	[a] 0.730
			36-45	2	17	
			56 or above	5	27	
2	Sex	Female	Male	6	51	[a] 0.688
			Female	8	54	
3	Education	Certificate/diploma	No level	0	2	[c] 0.879
			Primary	3	17	
			Secondary	5	28	
			Certificate/diploma	5	34	
			Bachelor's degree	1	18	
			Master	0	6	
4	Occupation	Government officer	Non	3	15	[c] 0.121
			Seasonal employment	1	7	
			Government Officer	2	45	
			Employees (Pvt sector)	6	20	
			Own business	2	18	
5	Income	US$575.5	Low (less than $600)	10	56	[c] 0.258
			High (More than $600)	4	49	
6	Status of marriage	Marriage	Married	9	78	[c] 0.400
			Divorced	1	6	
			Widow	1	2	
			Single	3	19	
7	Person concern of environment	An environment Concern person	No/not much concern	6	41	[b] 1
			Concern	8	64	
8	Electricity Conditions	Two or more meters in one house	One meter (Bill sharing)	7	48	[c] 0.432
			Two or more meters in one house	1	24	
			One meter (Bill not sharing)	6	33	
9	Electricity bill	US$90.6	Less than $50	9	37	[a] 0.036*
			More than$50	5	68	
10	Electricity stability	Sable	No	2	32	[a] 0.208
			Yes	12	73	
11	The satisfaction of ELCT Price	Not satisfied	No	11	90	[a] 0.484
			Yes	3	15	
12	Prefer a renewable source of energy	Prefer	No	2	4	[a] 0.092*
			Yes	12	101	
13	Total Score for Knowledge	16.52	Low level of knowledge	6	32	[a] 0.351
			high level of knowledge	8	73	
14	The total score for attitude	7.16	low-level attitude	13	56	[a] 0.005***
			high-level attitude	1	49	
Total number of respondents				14	105	

[a] Asymp. Sig. (2-sided) Pearson Chi-Square
[b] Asymp. Sig. (2-sided) Continuity Correction
[c] Exact Sig. (2-sided) Fisher's Exact Test

*significant at 90 %(0.1)
**Significant at 95% (0.05)
***Significant at 99% (0.01)

Source: Author, 2020

The correlation of the attitude and knowledge revealed a weak and low relationship ($0.21 < |r| \leq 0.40$) (Table 3).

Table 3 The Correlations between Knowledge and Attitude (Spearman's Rho)

		Attitude score	Knowledge score
Attitude score	Correlation Coefficient	1	.226**
	Sig. (1-tailed)	.	0.007
	N	119	119
Knowledge score	Correlation Coefficient	.226**	1
	Sig. (1-tailed)	0.007	.
	N	119	119
**. Correlation is significant at the 0.01 level (1-tailed).			

Source: Author, 2020

According to respondents, 88.2% were ready to accept solar energy, and 11.8% were not interested in solar energy. A high percentage of people representing the South Huvadhoo atoll in the study specified that they accepted solar energy.

Factor Influencing Peoples' Acceptances of Solar Energy

In order to identify the factors influencing solar energy acceptance at first, the chi-square tests were done to identify the variable, which had an association with the decision to use solar energy. The variables being examined were age, gender, education, occupation, income level, status marriage, a person of concern, electricity condition, electricity bill, electricity stability, electricity price satisfaction, preferable energy, attitude score, and education score.

The cross-tabulation and the association test showed that out of 14 variables, only three variables were significant; they were preference for renewable energy, electricity bill, and attitude score (Table 4.). These three variables were tested in the binary logistic regression to determine their effects. Even though the chi-square test indicated significance and an association between preference for renewable energy and solar energy acceptance, it was not significant in the logistic regression model.

The classification table presents that overall accuracy ratios were 88.2%. In the Omnibus Tests of Model Coefficients, Chi-square was significant (χ^2 (4) =18.479, p =0.000). In the model summary table, -2 log-likelihood was 67.727, Cox & Snell R Square was 0.144, and Nagelkerke R Square was 0.279, indicating the model or predictors exploring variations about 14.4 to 27.9%. The other classification table displays accuracy of 89.1%. These indicated that the model was a good fit for the prediction.

Table 4 Factors Influencing the Solar PV Adoption Using Binary Logistic Regression

	B	S.E.	Wald	df	Sig.	Exp(B)	95% C.I. for EXP(B)	
							Lower	Upper
Sustainable Energy Preferences	.876	1.007	.757	1	.384	2.402	.334	17.294
Electricity bill	1.522	.676	5.071	1	.024	4.582	1.218	17.233
Attitude score	.520	.181	8.220	1	.004	1.683	1.179	2.401
Constant	-2.676	1.374	3.795	1	.051	.069		

a. Variable(s) entered on step 1: Prefer RE, Electricity bill, Attitude score.

A binary logistic regression analysis was performed to predict the factors for solar energy acceptance. The outcome variable was coded 0= No (not accept) and 1= yes (accept). The three-predictor variable of 119 data cases was included in this analysis. Table 4.30 summarizes the raw score binary logistic regression coefficient, Wald statistics, and estimated changes in odd of acceptance along with 95% CI. The Wald ratio for the coefficient associated with preference to Sustainable Energy, Electricity bill, and attitude scores were statistically significant at 90%, χ^2 (1) = 0.757, P<0.384. , χ^2 (1) =5.071, P= 0.024, and χ^2 (1) =8.220, P=0.004, respectively.

The regression analysis indicated that there was a positive relationship between attitude score and solar energy acceptance. A respondent with a high score in attitude was about 0.683 times more likely to accept solar energy. In other words, by controlling for all other variables in the model, a one-mark increase in the attitude score increased the odds of accepting solar by 68.3%. The 75% CI for Exp(B) ranged from 1.175 to 2.401. Likewise, the electricity bill had a positive relationship with the acceptance rate. An increase in the electricity bill had a likelihood of an increase in the acceptance of solar energy. A 1 UD$ increased in the electricity bill while controlling all other variables in the model would increase the odds of accepting solar by a factor of 4.582. (95 % CI = 1.218 to 17.233). On the other hand, sustainable energy preference was not significant with solar energy acceptance according to the binary regression model.

Discussion

The logistic regression analysis result confirmed two factors influencing solar energy acceptance. First of all, the study indicated that the attitude score influenced solar energy acceptance. The attitude score was calculated through a series of questions. If the respondent felt that the Maldives' government would achieve 30% of energy from renewable energy by 2020, and solar energy could produce electricity, he/she was more likely to accept solar energy. On the contrary, if the respondent did not feel that the government was promoting solar energy and was not good for producing electricity, the respondent would more likely not accept solar energy. Likewise, if the respondent felt that it was difficult to get the financial, technical, and social support to invest in solar energy, the attitude towards solar energy usage would be negative, or people were more likely to reject solar energy. These findings are similar to Aklin

et al. (2018) that positive attitudes encouraged people in rural India to adopt solar power. The chance for adoption could increase if households felt more convinced about the benefits, and the government played a role in supporting it. Similarly, Parsad et al. (2020) found that government subsidies were the primary motivator for India's solar household adoption. It is because the investment in the new technology has an initial risk; thus, the government roles are essential within the risk-return framework.

From the correlation test, it was expressed that there was a correlation between knowledge and attitude, but it was weak and low. Similarly, a study in Yemen (Baharoon, Rahman, & Fadhl, 2016) disclosed that pupils of the urban and rural areas had a high positive attitude towards renewable energy, while their knowledge level was moderate. Even though the relationship was weak, the conclusions could be made that if the respondents knew more about solar energy and its promotion activities in the country, they would be more willing to accept solar energy. Further, a study was done in Korea (Jho, Yoon, & Kim, 2014), concluded that attitude had some degree of connection to decision making, while science knowledge was not significant to decision making. The result can be interpreted that even though people have the knowledge, they are reluctant to have a positive attitude based on other factors. It may be due to the government policies and the trust they have in the government projects. Besides, research carried out in Nigeria (Akinwale et al., 2014) implicated that most of the respondents agreed to adopt renewable energy if the government included peoples at the beginning of such projects. To get the public's participation, awareness and knowledge should be dispensed to the public. In this case, the people participating in the development projects were also low in the Maldives.

The electricity bill of the household influenced the acceptance of SE. The study exhibited that the average electricity bill of the respondent household was 90.61USD. The effect of change in electricity bill was high in the respondent's decision. An increase in the bill of electricity would lead the respondents to consider going for solar energy. Similar to this finding, Mohandes et al. (2019) suggested that higher electricity tariffs would vigorously promote residential solar PV adoption in Qatar. The consequence of this higher tariff is a reduction in PV costs, presented in three scenarios. Further, in Italy, an analysis done throughout 2012-2014 demonstrated a decrease in people's intention towards solar energy, which had a high effect than the solar PV system cost (Cucchiella & D'Adamo, 2015). Besides that, a study was conducted in Malaysia (Solangi, Badarudin, Kazi, Lwin, & Aman, 2013), which exposed that respondents were reluctant to pay the amount increase in the electricity bill due to the use of solar energy rather than fossil fuel where they had the fossil fuel resources available. However, in the case of Maldives, the cost reduction alternative source for electricity was solar energy. Therefore, an increase in spending on non-renewable electricity sources would lead the people to accept solar energy.

Conclusion

The main objective of the study was to discover factors influencing solar energy acceptance. The analysis was based on current geo-social factors, knowledge, and attitude. From the data received through the purposely distributed electronic survey, it could be implied that South Huvadhoo Atoll could be classified as young, educated, and working-class people since respondents' average age was 37 years, with an average education level held certificate or diploma and most of them worked as a government officer. The logistic regression model performed on this sample exposed that attitude level and electricity bill significantly influenced the people's decision to accept solar energy. Among those two, the attitude displayed a vital role in solar energy acceptance. Habitually attitude and knowledge had a good positive relationship. If the person had knowledge in a specific subject, he/she would have a positive attitude towards the subject matter, keeping other factors aside. However, in this case, relationships and attitudes had a low association. The reason for this would be affected by other factors, like a trust for government and culture and habits of the Maldives' islander. The people's participation was low in the Maldives. The people's mentality was that the government should provide everything to improve people's well-being. Furthermore, the study directed that the electricity bill had a noticeable degree of effects on the respondents' acceptance of solar energy. If the current electricity scenario keeps increasing the electricity bill, the people would think of alternative sustainable electrification systems.

The study result could be used as a guide for policymakers and further study on SE. There is a need to include solar energy lessons in the school curriculum and public media. In order to increase participation in the solar energy sector, the private sector has to be involved, and the investment scheme system has to be introduced. It will increase competition in the solar energy market. It will be beneficial rather than monopolizing the energy or electricity sector. Besides, the correct and easily accessible information system needs to be built. Human development programs should be framed to minimize the difficulties of finding technical experts in the solar energy area. The Maldives have to reform more lenient its legislation and regulations. Finally, a careful assessment of societal needs in the areas where solar energy projects are envisioned to be established.

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