

PREDICTORS OF BEHAVIOR INTENTION TO DEVELOP A GREEN UNIVERSITY: A CASE OF AN UNDERGRADUATE UNIVERSITY IN THAILAND

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ABSTRACT: The aim of this study is to identify the level and predictor of behavior intention to develop a green university in the case of an undergraduate university in Thailand. The university students and staff at Valaya Alongkorn Rajabhat University under the Royal Patronage, Thailand were selected as the participants in this study using a structured questionnaire covering the six major criteria of the UI GreenMetric World University Ranking. The best predictor factors of the dependent variable were determined by multiple logistic regression. The results showed that a positive attitude towards transportation and education were found to be the most significant predictors of intention to develop green university behavior. This finding implied that the preparation stage in which the behavior intention to develop a green university in the UI GreenMetric World University Ranking is identified should be promoted to provide the opportunity for the development of a green university.

Keywords: Behavior intention, Green University, Undergraduate University, Thailand

1. INTRODUCTION

For almost three decades, the sustainable society concept has been recognized, highlighting the significant role of higher education in providing the opportunity for generating behavior changes based on the daily life attitude of students and staff toward sustainable development [1], [2], [3]. Besides, the enhancement of concern for many environmental problems should generate knowledge and integrate sustainability performance in educational and research programs, as well as promote environmental awareness in society [4]. Hordijk [5] identified that knowledge generation by the university community was the key role of a sustainable campus with the ecological and social challenges facing societies in the future. Currently, the concept of a green university has been initiated worldwide. Universitas Indonesia (UI) developed the UI GreenMetric World University Ranking for universities to share information about their sustainability practices on the basis of Sustainability for Higher Education [6]. However, a green university initiative may be the best tool for society only when universities are well prepared for it. Hence, only 15 universities in Thailand were involved in this ranking process in 2014 [7]. There is currently a lack of research on the preparation stage for green university development in Thailand. Therefore, this study was conducted to identify the level and best

predictor of behavior intention to develop a green university for the case of an undergraduate university in Thailand.

2. METHODS

2.1 Case Study Setting

Valaya Alongkorn Rajabhat University (VRU) under the Royal Patronage, Thailand was selected as a case study for this research. This university is located in the Pathum Thani province on the northern border of Bangkok. Most VRU students are enrolled in an undergraduate degree program. VRU has not yet entered the UI ranking system but strongly intends to participate in 2018. Hence, the assessment of behavior intention to develop a green university formed the preparation stage for UI GreenMetric ranking for this university.

2.2 Sample size calculation and procedure

Taro Yamane's equation [8], presented in Eq. (1), was used to calculate the necessary sample size of VRU participants.

$$n = N / (1 + N(e)^2) \quad (1)$$
$$n = 14,000 / (1 + 14,000(0.05)^2) = 700 \text{ people}$$

where n is the sample size, N is the population size and e is the level of precision (0.05 for a 95% confidence level with a precision rate of $\pm 5\%$ and

a degree of maximum variability of 0.5). For VRU with a population of 14,000, this gives a sample size of 700, which consisted of 280 staff and 420 students recruited according to their proportion of the university population. VRU staff or students who had been working or studying at the university for at least six months were invited to fill out the questionnaire with no incentive. Simple random sampling conducted in the VRU main cafeteria for 1 week was used to collect participants for this research.

2.3 Data collection tool and analysis

The questionnaire was developed from the literature and was designed to explore the behavior intention towards a green university. There were three sections. General information about the participants was collected using eight questions making up the first section of the questionnaire. The second and third sections consisted of the 43 attitude questions and four questions on behavior intention to develop a green university, respectively, based on the UI GreenMetric categories including (1) Setting and infrastructure, (2) Energy and climate change, (3) Waste management, (4) Water management, (5) Transportation and (6) Education. Reliability tests for the attitude part gave a value of 0.7 for Conbach’s Coefficient-Alpha.

Statistical analysis of this study was performed using the SPSS software. Descriptive statistics were used to assess the level of knowledge and behavior intention to develop a green university. Association and strength of the relationship between factors were determined by Chi-squared analysis. Finally, multiple logistic regression was performed to identify the predictors of behavior intention to develop a green university.

3. RESULTS AND DISCUSSION

Based on the data from the questionnaires (Table 1), more than 67% of participants were female. Most of them (50.10%) were in the age group of 18 – 20 years old. Concerning the participants’ background, most of them (68.7%) were educated in undergrad level. Sixty percent of the participants were VRU students. Most participants (38.7%) lived at home and more than 45.6% used public transportation.

Table 1 Demographic information of the participants (n=700)

Items	Number	Percent
Sex		
Male	228	32.6
Female	472	67.4

Table 1 (Continued)

Items	Number	Percent
Age (Year)		
18-20	351	50.1
21-30	218	31.1
31-40	102	14.6
41-50	29	4.1
Education		
Bachelor	481	68.7
Master	199	28.4
Ph.D	20	2.9
Status		
Student	420	60.0
Staff	280	40.0
House type		
Home	271	38.7
Condominium	102	14.6
University	47	6.7
Dormitory	57	8.1
Rental home	223	31.9
Transportation to university		
Car	63	9.0
Motorcycle	187	26.7
Bicycle	49	7.0
Public transport	319	45.6
Other	82	11.7
Transportation within university		
Car	37	5.3
Motorcycle	155	22.1
Bicycle	67	9.6
Public transport	41	5.9
Other	400	57.1

Table 2 presents the participant knowledge levels in the six categories of the UI GreenMetric including infrastructure, climate change, waste management, water management, transportation and education system. The knowledge categories for the infrastructure, climate change, waste management, water management and education system categories were at moderate levels. Only the transportation category of the UI GreenMetric was at a good level.

Table 2 Level of knowledge toward a green university (n=700)

Items	Number	Percent
Infrastructure		
Poor	85	12.1
Moderate	466	66.6
Good	149	21.3

Table 2 (Continued)

Items	Number	Percent
Climate change		
Poor	49	7.0
Moderate	548	78.3
Good	103	14.7
Waste management		
Poor	128	18.3
Moderate	398	56.9
Good	174	24.9
Water management		
Poor	163	23.3
Moderate	111	15.9
Good	426	60.9
Transportation		
Poor	123	17.6
Moderate	292	41.7
Good	285	40.7
Education system		
Poor	129	18.4
Moderate	291	41.6
Good	280	40.0

Table 3 shows that most of the participants (52%) had a good behavior intention to develop a green university. Regarding the instances of low behavior (> 20%) in Table 4, buy environment-friendly materials, effective use of renewable energy, participate in environmental sustainability activities, be a member of an environmental and sustainability club and access the green university website were the main items for which an enhancement approach is recommended to develop a green university.

For statistical analysis, participants who were female and had a positive attitude toward the setting and infrastructure, energy and climate change, waste management, transportation and education intended to support a green university. This finding agrees with the results of Mamat et al. [9] who found that green office practices have the highest in the categories of solid waste management, water resources management and education and awareness. Multiple logistic regression analysis revealed that females were 1.4 times more likely to support a green university (Adj. OR 1.21; 95% CI: 1.00-2.01) because males were considered as the primary destroyers of the

environment, whereas females were deemed as secondary users of the environment [10]. In addition, those who had a positive attitude towards transportation and education were nearly two times more likely to support a green university (Adj. OR 1.55; 95% CI: 1.09-2.18, 1.86; 95% CI: 1.33-2.59) (Table 2) because the promotion of public transport within the university should be the potential of UI green implementation [6].

It can be concluded that the identification of the level of behavior intention to develop a green university according to the UI GreenMetric World University Ranking should be performed for the preparation stage. More positive attitudes and behavior would increase the potential for green university implementation. This initiative could result in a successful strategy for encouraging world sustainability.

Table 3 Level of behavior toward a green university (n=700)

Items	Number	Percent
Behavior toward green university		
Poor	371	53.0
Good	329	47.0

4. CONCLUSION

The purpose of this study was to identify the level and predictor of behavior intention to develop a green university for the case of an undergraduate university in Thailand. The students and staff at Valaya Alongkorn Rajabhat University under the Royal Patronage, Thailand were selected as the sample population for this study. A questionnaire for collecting data was developed using the six major criteria of the UI GreenMetric World University Ranking. Association and strength of the relationship between factors were determined by Chi-squared analysis and logistic regression, and determination of the best predictor factors was performed by multiple logistic regression. The results showed that a positive attitude towards transportation and education were found to be the most significant predictors of intention to develop a green university.

5. ACKNOWLEDGEMENTS

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Table 4 Level of behavior in the six categories of a UI green university

Items	Behavior			
	No		Yes	
	n	%	n	%
Infrastructure				
Participate in planting a tree in the university	250	35.7	450	64.3
Make repairs for effective use and a friendly environment	462	66.0	238	34.0
Buy environment-friendly materials	604	86.3	96	13.7
Effective use of renewable energy	594	84.9	106	15.1
Climate change				
Turn off the lights	39	5.6	661	94.4
Use the stairs	20	2.9	680	97.1
Adjust the temperature to 25°C	20	2.9	680	97.1
Turn off the air conditioning at lunch time and after work	29	4.1	671	95.9
Shut down electronic devices when...	30	4.3	670	95.7
Participate in energy-saving project	413	59.0	287	41.0
Participate in climate change activity	458	65.4	242	34.6
Design the office/classroom to conserve energy	541	77.3	159	22.7
Waste management				
Dispose of waste into the garbage	56	8.0	644	92.0
Replace foam box with own lunch box	337	48.1	363	51.9
Choose a restaurant with easy biodegradable packaging	388	55.4	312	44.6
Use own glass	279	39.9	421	60.1
Use a cloth bag or basket	175	25.0	525	75.0
Reuse plastic bags	46	6.6	654	93.4
Refuse a plastic bag for few items	53	7.6	647	92.4
Use double-sided paper	22	3.1	678	96.9
Use recycled paper for printing	27	3.9	673	96.1
Replace tissue paper with a re-usable napkin	79	11.3	621	88.7

Table 4 (Continued)

Items	Behavior			
	No		Yes	
	n	%	n	%
Waste management (Continued)				
Separate hazardous waste	67	9.6	633	90.4
Participate in reducing waste in the university	281	40.1	419	59.9
Water management				
Turn off the water when not in use	16	2.3	684	97.1
Use water-saving faucet	29	4.1	671	95.9
Participate in water-saving activity	462	66.0	238	34.0
Use water-saving lavatory	55	7.9	645	92.1
Inform the staff of water leaks	97	13.9	603	86.1
Transportation				
Use the sidewalk within the university	32	4.6	668	95.4
Use a bicycle within the university	302	43.1	398	56.9
Use a motorbike within the university	297	42.4	403	57.1
Use a car within the university	416	59.4	284	40.6
Participate in reducing the use of cars within the university	499	71.3	201	28.7
Use public transportation	136	19.4	564	80.6
Education system				
Attend a course related to environment and sustainability	637	96.1	27	3.9
Participate in environmental activities	514	73.4	186	26.6
Participate in environmental sustainability activities	698	99.7	2	0.3
Be a member of an environmental and sustainability club	699	99.9	1	0.1
Access the green university website	699	99.9	1	0.1

Table 5. Association and predictor with behavior intention to develop a green university

Factor	Behavior		OR	95% CI	Adjusted OR	95% CI
	Number	Good (%)				
Sex						
Male	228	58.8%	41.2%	1.00		
Female	472	50.2%	49.8%	1.41	1.02-1.94	1.00-2.02
Age (Year)						
18-30	569	53.4%	46.6%	1.00		
30-50	131	51.1%	48.9%	1.09	0.74-1.60	0.72-1.91
Education						
Bachelor	481	52.6%	47.4%	1.00		
More than bachelor	219	53.9%	46.1%	0.95	0.68-1.30	0.61-2.01
Status						
Student	420	52.6%	47.4%	1.00		
Staff	280	53.6%	46.4%	0.96	0.71-1.30	0.42-1.42
House type						
Home/Condominium	373	55.8%	373	1.00		
Dormitory/rental	327	49.8%	327	1.26	0.94-1.70	0.88-1.68
Transportation to university						
Public	319	54.9%	319	1.00		
Own	381	51.4%	381	1.14	0.85-1.54	0.82-1.73
Transportation in university						
Public	192	53.1%	46.9%	1.00		
Own	508	53.0%	47.0%	1.00	0.72-1.40	0.61-1.41
Knowledge of Green University						
Infrastructure						
Low	551	55.5%	44.5%	1.00		
High	149	43.6%	56.4%	1.61	1.12-2.32	0.86-1.88
Climate change						
Low	597	54.8%	45.2%	1.00		
High	103	42.7%	57.3%	1.62	1.06-2.47	0.71-1.80
Waste management						
Low	526	56.1%	43.9%	1.00		
High	174	53.0%	47.0%	1.54	1.16-2.32	0.82-1.82
Water management						
Low	274	55.5%	44.5%	1.00		
High	426	51.4%	48.6%	1.17	0.86-1.59	0.60-1.19
Transportation						
Low	415	59.3%	40.7%	1.00		
High	285	43.9%	56.1%	1.86	1.37-2.52	1.09-2.18
Education system						
Low	420	60.2%	39.8%	1.00		
High	280	42.1%	57.9%	2.08	1.53-2.82	1.33-2.59

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