THE ATTITUDE OF UNDERGRADUATE SUTUDENTS IN FACULTY OF SCIENCE AND TECHNOLOGY ON THE DEVELOPMENT OF SUAN SUNANDHA RAJABHAT UNIVERSITY TOWARD A GREEN UNIVERSITY

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ABSTRACT

This research aimed to 1) study on the attitude level of undergraduate students in Faculty of Science and Technology on the development of Suan Sunandha Rajabhat University (SSRU) toward a green university; and 2) compare the attitude of those students depending on their personal characteristics which include sex, year and program of the study, on the development SSRU to the green university. By this study, questionnaires were used to collect data from the sample size which were 400 undergraduate students in Faculty of Science and Technology. Data were then analyzed by mean ($\overline{X}$), standard deviation (S.D.), t-Test and F-Test at .05 of the significant level. As a result of this research, it was found that 1) the attitude of undergraduate students on the development of SSRU toward a green university by the criteria of UI Green Metric World University Ranking in six categories which consist of setting and infrastructure, energy and climate change, waste, water, transportation, and education and research was at high level ($\overline{X}$ = 3.75); and 2) male and female undergraduate students were not statistically different in the attitude on the development of SSRU toward a green university [Sig. = .2 3 1 > α (.05)] whereas students with different year and program of their studies were statistically different in that attitude at .05 and .01 of the significant levels [Sig. = .037 and .000 < α (.05 and .01), respectively].

Keywords: Attitude, Green university, UI Green Metric World University Ranking

1. INTRODUCTION

Nowadays, world population has increased very rapidly from year by year. This situation leads to over consumption of natural resources in order to serve the good quality of life for people, especially those who live in developed and developing countries. That is why the concept of "sustainable development" seems to be more important for our world today in trying to balance the utilization and conservation of natural resources. In fact, this concept has been alerted to the international society since the late 19th century and early 20th century by the questions on how to demonstrate and balance of natural resources and their development and application. [1] Since then, the issue of environmental and natural resources protection has gradually been valued in the world.

"Green University" is the term commonly known as all kinds of activities under the vision of "sustainable development". It represents an important responsibility undertaken by higher education for the development of society. The purpose for establishment of "green university" is to reduce bad environments caused by the operation of university in terms of using a large amount of natural resources such as water, electricity, chemicals, oil and gas, etc. An university with large campus and many students takes more resources than a simple community and institution. [2] The "green university" concept has been accepted very widely and becoming more popular among leading universities in many parts of the world. For example, Oxford, Harvard, and the University of Singapore have been practicing it for a long time. [3] As a result of best practices, sustainable development and environmental protection programs are most successful in those universities.

The way to approach the concept of "green university" can be done by following the guideline established by UI Green Metric World University Ranking. This guideline consists of six criteria and indicators which include setting and infrastructure, energy and climate change, waste, water, transportation, and education and research

with the weightings of 15%, 21%, 18%, 10%, 18% and 18%, respectively. There were ninety-five universities from 35 countries took part in the 2010 version of UI Green Metric in which 18 universities were from America, 35 from Europe, 40 from Asia and 2 from Australia. In 2017, UI Green Metric World University Ranking ranked 619 universities from 76 countries around the world. This shows that UI Green Metric has been recognized as the first and only world university rankings on sustainability. [4]

In Thailand, many universities concern about how to create their campuses as "green university" by the guideline of UI Green Metric World University Ranking. In 2018, there were three leading universities, namely Mahidol University, Chulalongkorn University, and Kasetsart University, were ranked in the top of first hundred ranking of UI Metric World University Ranking. [5] However, not only the three universities mentioned above, but also the others such as Suan Sunandha Rajabhat University (SSRU) are now working on the development of main campus to the concept of "green university". It is, therefore, the purpose of this study to investigate the attitude of undergraduate students in Faculty of Science and Technology, as a case study, in order to encourage them in moving SSRU forward to a green university of the country in the near future.

2. OBJECTIVES

Objectives of the study on the attitude of undergraduate students in Faculty of Science and Technology on the development of Suan Sunandha Rajabhat University toward a green university were as follow: -

1. to investigate the attitude level of undergraduate students in Faculty of Science and Technology on the development of Suan Sunandha Rajabhat University (SSRU) toward a green university, and

2. to compare the attitude of those students depending on sex, year and program of their studies on the development SSRU to the green university.

3. METHODOLOGY

The study method of this research can be described according to the following detail: -

1. *Population*

In this research, population of undergraduate students in the Faculty of Science and Technology, Suan Sunandha Rajabhat University were 2,664 students in the academic year 2017-2018. They were studying in the 1st to the 4th year of 15 programs which consist of Computer Science, Home Economics, Applied Physics, Applied Statistics, Sport and Health Science, Food Science and Technology, Information Technology, Biotechnology, Chemistry, Industrial Microbiology, Food Industry and Services, Environmental Science, Biology, Informatics Mathematics and Forensic Science, respectively. [6]

2. *Sample size*

The sample size of undergraduate students employed in this study was calculated by using the Taro Yamane's equation [7] as follow: -

$$ n = \frac{N}{1 + N(e)^2} $$

Note that
n = corrected sample size
N = population size of undergraduate students
e = Margin of error (MoE) which is equal to 0.05

Therefore, the sample size used in this study was equal to 348 students as shown below: -

$$ n = \frac{2,664}{1 + 2,664(0.05)^2} $$
$$ = 348 $$

The number of 348 undergraduate students were then selected by stratified sampling technique which was divided into 15 programs of the study. After that, the sample of students in each program were selected again by using simple random sampling technique so that undergraduate students studying in the 1st to the 4th year of each program were prepared for the study.

3. Research equipment

In order to collect data for this research, a questionnaire concerning the attitude of undergraduate students in Faculty of Science and Technology on the development of Suan Sunandha Rajabhat University toward a green university was established by means of the project advisor and also the experts in this field. This questionnaire was the equipment employed for this study by distributing to all of 348 sample of undergraduate students from 15 programs in Faculty of Science and Technology, Suan Sunadha Rajabhat University. Then, the data were analyzed in order to achieve the objectives of the research.

4. Statistical methods
4.1 descriptive statistics

The descriptive statistics used in this study were frequency and percentage in order to describe personal characteristics of 348 sample which included sex, year and program of their studies, respectively. In addition, mean ($\overline{x}$) and standard deviation (S.D.) were also used in order to describe the attitude level of undergraduate students in Faculty of Science and Technology on the development of Suan Sunandha Rajabhat University toward a green university.

4.2 Inferential statistics

The inferential statistics used in this study were t-Test and F-Test or One-way ANOVA at the significant level of 95%. In this case, the hypotheses of the study in order to compare the attitude levels of undergraduate students on the development of Suan Sunandha Rajabhat University toward a green university were as follow: -

H_0: Undergraduate students with different sex, year and program of the study were not different in the attitude level on the development of SSRU toward a green university.

H_1: Undergraduate students with different sex, year and program of the study were different in the attitude level on the development of SSRU toward a green university.

4. RESULTS

The results of this research can be described in accordance with objectives of the study. Followings are detail of the results found in this study: -

1. Personal characteristics of undergraduate students

The number of 348 undergraduate students who were selected as the sample of this research can be described for their personal characteristics into 3 items as shown in Table 1.

Table 1 Personal characteristics of undergraduate students in this study

Personal Characteristics		Frequency (student)	Percentage (%)
Sex			
	male	151	43.4
	female	197	56.6
	Total	348	100.0
Year of the study			
	1st year students	86	24.7
	2nd year students	86	24.7
	3rd year students	114	32.8
	4th year students	62	17.8
	Total	348	100.0
Program of the study			
	Computer Science	49	14.1
	Home Economics	32	9.2
	Applied Physics	8	2.3
	Applied Statistics	19	5.5
	Sport and Health Science	55	15.8
	Food Science and Technology	16	4.6
	Information Technology	62	17.8
	Biotechnology	6	1.7
	Chemistry	13	3.7
	Industrial Microbiology	14	4.0
	Food Industry and Services	11	3.2
	Environmental Science	26	7.5
	Biology	21	6.0
	Informatics Mathematics	7	2.0
	Forensic Science	9	2.6
	Total	348	100.0

2. *Attitude level of undergraduate students on the development of SSRU toward a green university*

It was found that the attitude on development of Suan Sunandha Rajabhat University toward a green university of undergraduate students in Faculty of Science and Technology by average was at high level ($\overline{X}$ = 3.75). Among these, the attitude on energy and climate change (EC) was at the highest level ($\overline{X}$ = 3.92) followed by the attitude on transportation (TR)**,** water (WR), setting and infrastructure (SI)**,** waste (WS), and education and research (ED) ($\overline{X}$ = 3.85, 3.81, 3.72, 3.70 and 3.53), respectively (Table 2).

Table 2 Attitude level of undergraduate students on the development of SSRU toward a green university

Criteria & Indicator	Mean	S.D	Attitude level	Ranking
Setting and Infrastructure (SI)	3.72	0.62	high	4
Energy and Climate Change (EC)	3.92	0.67	high	1
Waste (WS)	3.70	0.72	high	5
Water (WR)	3.81	0.67	high	3
Transportation (TR)	3.85	0.72	high	2
Education and Research (ED)	3.53	0.79	high	6
Average	3.75	0.54	high	

3. Comparison of attitude level of undergraduate students on the development of SSRU toward a green university

3.1 Comparison of the attitude level by sex

Table 3 shows the comparison of attitude level of undergraduate students in Faculty of Science and Technology on the development of Suan Sunandha Rajabhat University toward a green university by sex. It was found that the attitude level between male and female students were not statistical different [Sig. = .231 > α (.05)] which means that either male or female students had the same level of attitude on development of SSRU toward a green university.

Table 3 Comparison of attitude level of undergraduate students on the development of SSRU toward a green university by sex

Sex	Mean	t	Sig.
Male	3.72	-1.052	0.231
Female	3.78		

3.2 Comparison of the attitude level by different year of the study

Table 4 shows the comparison of attitude level of undergraduate students in Faculty of Science and Technology on the development of Suan Sunandha Rajabhat University toward a green university by different year of their studies. It was found that the attitude level among the 1st to the 4th year students were statistical different at the significant level of .05 [Sig. = .037 < α (.05)] which means that students had not the same level of attitude on development of SSRU toward a green university when they were in different year of their studies.

Table 4 Comparison of attitude level of undergraduate students on the development of SSRU toward a green university by different year of   their studies

Year of the study	Mean	F	Sig.
1st year students	3.85	2.854	0.037 *
2nd year students	3.67		
3rd year students	3.70		
4th year students	3.83		

Remark: *   statistical different at the significant level of .05

3.3 Comparison of the attitude level by different program of the study

Table 5 shows the comparison of attitude level of undergraduate students in Faculty of Science and Technology on the development of Suan Sunandha Rajabhat University toward a green university by different program of their studies. It was found that the attitude level of students studying in different program were statistical different at the significant level of .01 [Sig. = .000 < α (.01)] which means that students had not the same level of attitude on development of SSRU toward a green university when they were in different program of their studies.

Table 5 Comparison of attitude level of undergraduate students on the development of SSRU toward a green university by different program of their studies

Program of the study	Mean	F	Sig.
Computer Science	3.93	3.863	0.000 **
Home Economics	3.56		
Applied Physics	3.57		
Applied Statistics	3.80		
Sport and Health Science	3.49		
Food Science and Technology	3.80		
Information Technology	3.87		
Biotechnology	3.82		
Chemistry	3.72		
Industrial Microbiology	4.03		
Food Industry and Services	3.88		
Environmental Science	4.07		
Biology	3.82		
Informatics Mathematics	3.65		
Forensic Science	3.77		

Remark: ** statistical different at the significant level of .01

5. CONCLUSIONS AND RECOMMENDATIONS

The study on attitude level of undergraduate students about the development toward a green university was conducted as a case study in Faculty of Science and Technology, Suan Sunandha Rajabhat University, Bangkok, Thailand. The aims of this study were to investigate and compare the attitude level of those students depending on sex, year and program of their studies on the development of SSRU to the green university. As the results of this study, it was found that the attitude of undergraduate students on 6 criteria and indicators to develop SSRU as a green university were at high level. The study also indicated that male and female students had no difference on their attitudes about the development of SSRU toward a green university. However, students with different year and program of their studies had the difference on their attitudes in this aspect.

6. ACKNOWLEDGEMENT

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