"Attitudes Toward Sustainable Agriculture Concepts and Practices Among Students of School of Agriculture of Sulu State College"

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DOI: https://dx.doi.org/10.47772/IJRISS.2024.808096

Received: 09 August 2024; Revised: 19 August 2024; Accepted: 23 August 2024; Published: 31August 2024

ABSTRACT

This study assessed the extent of attitudes toward sustainable agriculture concepts and practices among students of School of Agriculture of Sulu State College during the Academic Year 2023-2024. With 100 samples taken through non-probability sampling method via purposive sampling, and with the use of weighted mean, standard deviation, ttest for independent samples, One-way ANOVA, and Pearson's r, this study reveals the following findings: 1) Students of the School of agriculture of Sulu State College involved in this study are adequately represented in terms of gender, age, parent's educational attainment, and parent's average monthly income; 2) On the average, students of the School of Agriculture of Sulu State College expressed agreement that they have high extent of attitudes toward sustainable agriculture concepts and practices. 3) Generally, except for parent's educational attainment, demographic profiles in terms of gender, age, and parents' average monthly family income do not significantly mediate in ways how students of the School of Agriculture of Sulu State College assessed the extent of attitudes toward sustainable agriculture concepts and practice; 4) The group of agriculture students at the School of Agriculture of Sulu State College who assessed the extent of sustainable agricultural concepts in terms of Production efficiency as "Agree" or with High Extent could possibly be the same group of agriculture students at the School of Agriculture of Sulu State College who assessed the extents of Economic viability and Social responsibility as "Agree" or with High Extent, and Environmental sustainability as "Strongly Agree" or with Very High Extent, respectively; 5) This study seems to be aligned with Allahyari, M.S. (2008) model which is based on Connors et al. (2004) and Chen (2003) at the Ohio State University. The model is composed of the following constructs: production efficiency, economic viability, environmental sustainability and social responsibility.

INTRODUCTION

At the midst of recent world order, many developing countries such as the Philippines, experiencing issues and concerns in sustainability in agriculture relative to food security, rural development and agricultural production as brought about by increasing threat due to climate change and human attitudes.

In most rural areas of ASEAN countries, agriculture is the primary source of people's livelihood. But it has been difficult for most small-scale farmers to earn for a living even just to meet both ends. Low productivity and quality harvests are caused by limited access to quality inputs, technologies and up to date knowledge and farming skills. Remoteness, low connectivity and low bargaining power leads to farmers being excluded from markets and having difficulties selling their products at reasonable prices (Khatun, Tohura, 2024).

Sustainable development through sustainable agriculture is widely accepted concept. Therefore, it should provide a solution in terms of meeting basic human needs, integrating environmental development and protection, achieving equality, ensuring social self-determination and cultural diversity, and maintaining ecological integrity. Although the concept of sustainable development has undergone certain changes during the past, its fundamental principles and goals have contributed to a more conscious behavior adapted to the limitations of the environment. (Klarin, Tomislav, 2018).

Notably, numerous international organizations have been involved in implementation of the sustainable development, albeit sustainable agriculture concept, while it has found positive implementation locally, but it

did not produce significant results on a global scale. This fact proves environmental problems which, decades after the introduction of the concept, are still ongoing. Contemporary understanding of the concept of sustainable development is considered through the United Nations Millennium Development Goals focused on a complex global situation, such as population growth, hunger and poverty, wars and political instability, and further degradation of the environment. Many countries are not even close to sustainable development and the gap between developed and under-developed countries has deepened. Fundamental constraints of the implementation of the concept of sustainable development are the degree of socio-economic development that many countries have not yet achieved, associated with a lack of financial resources and technology, but also the diversity of political and economic goals on a global scale (Klarin, Tomislav, 2018).

Based on Connors et al. (2004) and Chen (2003) at the Ohio State University, Allahyari, M.S. (2008) proposed four areas of the sustainable agriculture, namely: production efficiency, economic viability, environmental sustainability and social responsibility. However, Allahyari, M.S. (2008) contended that sustainable agriculture has been viewed in many ways and people's views of it depend on their areas of interest and background such that, farmers, environmentalists, protectors of natural resources and rural settlers have various interests and concerns on this issue and thus, each give a separate definition on sustainable agriculture.

Therefore, this study was conducted in order to shed light on the various views of different sectors especially those people who reside in developing countries so much so coming from provincial and remote rural areas like in Sulu.

Statement of the Problem

This study assessed the extent of attitudes toward sustainable agriculture concepts and practices among students of School of Agriculture of Sulu State College.

Specifically, this study sought answers to the following questions:

1. What is the demographic profile of student-respondents in terms of:

    1.1 Gender;

    1.2 Age;

    1.3 Parent's average monthly income; and

    1.4 Parent's educational attainment?

2. What is the extent of attitudes toward sustainable agriculture concepts and practices among students of School of Agriculture of Sulu State College in the context of:

    2.1 Production efficiency;

    2.2 Economic viability;

    2.3 Environmental sustainability; and

    2.4 Social responsibility?

3. Is there a significant difference in the extent of Sulu State College School of Agriculture students' perspective toward sustainable agriculture concepts data classification:

    1.1 Gender;

    1.2 Age;

    1.3 Parent's average monthly income; and

1.4 Parent's educational attainment?

4. Is there a significant correlation among the sub-categories subsumed under the extent of Sulu State College School of Agriculture students' perspective toward sustainable agriculture concepts?

Objectives of the Study

This study was designed to achieve the following objectives in its course of completion, it determined:

1. The demographic profile of student-respondents in terms of: Gender, Age, Parent's average monthly income, and Parent's educational attainment;

2. The extent of attitudes toward sustainable agriculture concepts and practices among students of School of Agriculture of Sulu State College in the context of: Production efficiency, Economic viability, Environmental sustainability, and Social responsibility;

3. The significant difference in the extent of Sulu State College School of Agriculture students' perspective toward sustainable agriculture concepts when data are grouped according to: Gender, Age, Parent's average monthly income, and Parent's educational attainment;

4. The significant correlation among the sub-categories subsumed under the extent of Sulu State College School of Agriculture students' perspective toward sustainable agriculture concepts.

Hypotheses

The following hypotheses were posited in this study:

1. There is no significant difference in the extent of Sulu State College School of Agriculture students' perspective toward sustainable agriculture concepts when data are grouped according to: Gender, Age, Parent's average monthly income, and Parent's educational attainment; and

2. There is no significant correlation among the sub-categories subsumed under the extent of Sulu State College School of Agriculture students' perspective toward sustainable agriculture concepts.

Theoretical Framework

This study was anchored on Allahyari, M.S. (2008) Model which is based on Connors et al. (2004) and Chen (2003) at the Ohio State University. The model is composed of the following constructs: production efficiency, economic viability, environmental sustainability and social responsibility.

Production efficiency involves concepts such as the role of technology to increase efficiency of agricultural production, meeting food needs with fewer farmers as outcome of technological progress, nationalization and regionalization of production, processing, and marketing of agricultural products, and the use of technology to make farm labor more rewarding and enjoyable, but not to replace it.

Economic viability involves concepts such as treating farming as the first and foremost a business like any other business, farmers' goals are to maximize the productivity, efficiency, and profitability of their farms, farmer's focus is on earning enough from farming to enjoy a good standard of living, farmers farm only as much land as they can personally manage, and equal distribution of the farmland to individual/corporation in order to encourage land ownership by as many people as possible.

Environmental sustainability involves concepts such as soil and water

conservation, specialized faming in one or at most a few crops, natural ecosystems and farm are in harmony with nature, use of natural fertilizers/production methods such as manure, crop rotations, compost, and biological pest control, expansion of efforts to develop bio- technologies and other innovations in order to increase food

supplies, modification of modern agriculture to become ecologically sound, and integration of agronomy and animal husbandry.

Social responsibility involves concepts such as agricultural education programs should teach students about the interrelationships among the environment, agriculture, and people, agricultural education programs is to develop future leaders for the agricultural industry and rural communities, modernization of farm traditions and culture, and sustainability is the outcome of the collective decision-making that arises from interaction among stakeholders.

Conceptual Framework

This study was conceptualized as follows: The extent of attitudes toward sustainable agriculture concepts and practices among students of School of Agriculture of

Sulu State College in the context of: Production efficiency, Economic viability, Environmental sustainability, and Social responsibility were treated as the Dependent

Variable. While Respondents' Demographic Profile such as Gender, Age, Parent's average monthly income, and Parent's educational attainment were treated as the Independent Variable. The interplay of these variables can be shown in Figure 1.

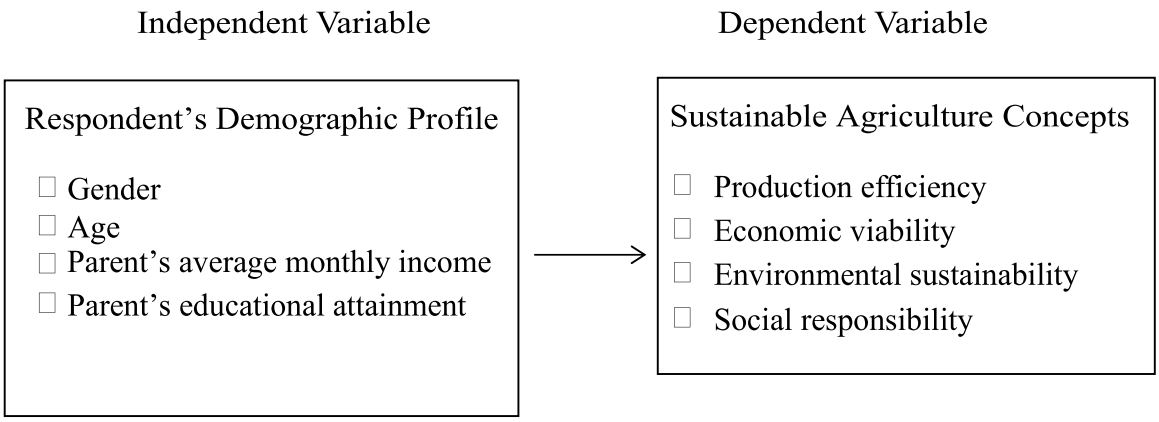

Figure 1. Conceptual Model of the Study

Significance of the Study

The results of the study was beneficial to each of the following entities:

1) Administration Officials. The findings of this study will provided significant inputs to the college administrators in their needs for more empirical data on the structuring of plans, implementation and evaluation of agriculture programs and policies geared towards ensuring effective, responsive and sustainable program in agriculture of Sulu State College.

2) Faculty. Faculty can be provided with necessary inputs in determining the sustainable agriculture concepts whereby they can utilize such knowledge in the discharge of their teaching profession.

3) Student-researchers. This study will triggered researchers to venture on other avenues or research areas related to this field of sustainable agriculture concepts.

Scope and Delimitation of the Study

This study was conducted in Sulu State College among the one hundred (100) students of the School of Agriculture who will be represented by students enrolled in Gandasuli Campus and those in Extension Classes in Omar and Kalinggalan Kaluang municipalities. The construct of Sustainable Agriculture Concepts was

confined to Production efficiency, Economic viability, Environmental sustainability, and Social responsibility. The time frame of this study was set at Academic Year 2023-2024.

Operational Definition of Terms

The following terms are hereby defined as they were used in this study:

Gender – refers to the sex of the respondent whether male or female.

Age – refers to chronological age of the respondents enrolled in School of Agriculture, Sulu State College.

Parent's average monthly income – refers to the monthly income of the parents of the respondents enrolled in School of Agriculture, Sulu State College.

Parent's educational attainment – refers to the level of education of the parents of the respondents enrolled in School of Agriculture, Sulu State College as to whether elementary, high school, college, master's and doctorate.

Production efficiency – refers to the extent how respondents assess the role of technology to increase efficiency of agricultural production, meeting food needs with fewer farmers as outcome of technological progress, nationalization and regionalization of production, processing, and marketing of agricultural products, and the use of technology to make farm labor more rewarding and enjoyable, but not to replace it.

Economic viability – refers to the extent how respondents assess the concepts such as treating farming as the first and foremost a business like any other business, farmers' goals are to maximize the productivity, efficiency, and profitability of their farms, farmer's focus is on earning enough from farming to enjoy a good standard of living, farmers farm only as much land as they can personally manage, and equal distribution of the farmland to individual/corporation in order to encourage land ownership by as many people as possible.

Environmental sustainability – refers to the extent how respondents assess the concepts such as soil and water conservation, specialized faming in one or at most a few crops, natural ecosystems and farm are in harmony with nature, use of natural fertilizers/production methods such as manure, crop rotations, compost, and biological pest control, expansion of efforts to develop bio- technologies and other innovations in order to increase food supplies, modification of modern agriculture to become ecologically sound, and integration of agronomy and animal husbandry.

Social responsibility – refers to the extent how respondents assess the concepts such as agricultural education programs should teach students about the interrelationships among the environment, agriculture, and people, agricultural education programs is to develop future leaders for the agricultural industry and rural communities, modernization of farm traditions and culture, and sustainability is the outcome of the collective decision-making that arises from interaction among stakeholders.

METHODS

This chapter showcases the research methodology to be adopted in the conduct of this study. It focuses on research design, research locale, respondents of the study, sampling procedure, data gathering procedure and tools, research instrument, validity and reliability, and statistical treatment of data.

Research Design

A descriptive-correlational research design was adopted in this study. According to Bless and Higson-Smith (1995), they introduced the concept of a research design as "a program that guides a researcher in collecting, analyzing and interpreting observed facts." (p.63). Similarly, Babbie and Mouton (2001: p.75) regard research design as the road map or blueprint by which one intends to conduct a research and achieve his/her research goals and objectives." Hence, research design that was employed in this study, was to describe, quantify, and infer as well as to discover relationships among variables and to allow the prediction of future events from

present knowledge or phenomenon of first year college students, namely: 1) The socio-demographic profile of agriculture students of

Sulu Sate College in Sulu in terms of Gender, Age, Parent's educational attainment, and Parent's average monthly income; 2) The extent of attitudes toward sustainable agriculture concepts and practices among students of School of Agriculture of Sulu State College in the context of: Production efficiency, Economic viability, Environmental sustainability, and Social responsibility; 3) The significant difference in the extent of attitudes toward sustainable agriculture concepts and practices among students of School of Agriculture of Sulu State College when data are grouped according to Gender, Age, Parent's educational attainment, and Parent's average monthly income; and 4) the correlation between the sub-categories subsumed under the extent of attitudes toward sustainable agriculture concepts and practices among students of School of Agriculture of Sulu State College.

Agriculture students of Sulu State College were the main source of data which were quantified to answer the research questions in this study. Library and internet researches and publications were the sources of information that were used to enrich the theoretical and conceptual frameworks of this research. The data from the respondents were gathered through the use of survey questionnaires.

Research Locale

This study was conducted in Sulu State College during the Academic Year 20232024. This college is under the direct supervision and administration of the Commission on Higher Education (CHED).

Respondents of the Study

The respondents of this study were agriculture students of Sulu State College who are currently enrolled at the School of Agriculture regardless of their marital status and year-level during the Academic Year 2023-2024.

Figure 2. Distribution of the target samples among agriculture students of Sulu State College

Agriculture Students of Sulu State College	Students		Total
	Male	Female	
Agriculture Students	40	60	100
Total			100

Sampling Design

A none-probability sampling design through purposive sampling method was employed in this study due to resources and time constraints. The use of purposive sampling technique was to ensure the representation of gender, age, parent's educational attainment, and parent's average monthly income variables.

Data Gathering Procedure

The following steps were employed in the course of data gathering:

1) A permit to administer the questionnaire was sought from the Office of the Dean of Graduate Studies, and the President of the Sulu State College; and

2) The launching and administering as well as the retrieval of the questionnaire was conducted personally by the researcher.

Research Instrument

A survey questionnaire was the main instrument used to gather data on the extent of constraints on adoption of

ICT in agriculture as assessed by students of agriculture of Sulu State College. It was adapted and patterned with minimal revisions from standardized questionnaire used in Allahyari, M.S. (2008).

The research instrument used in this study consisted of two parts. Part I of the questionnaire focused on obtaining the demographic profile of the respondents which include gender, age, parent's educational attainment, and parent's average monthly income. Part II was geared toward obtaining data on the extent of attitudes toward sustainable agriculture concepts and practices among students of School of Agriculture of Sulu State College in the context of: Production efficiency, Economic viability,

Environmental sustainability, and Social responsibility. A 5-point Likert-Scale was used to measure the variables subsumed under the extent of attitudes toward sustainable agriculture concepts and practices among students of School of Agriculture of Sulu State College in the context of: Production efficiency, Economic viability, Environmental sustainability, and Social responsibility.

Validity and Reliability

The instrument used in this research was patterned and adapted with slight revision from standardized questionnaires which have been used in previous studies. However, to suit its applicability to the local settings, these questionnaires were subjected for perusal of at least two experts from among the faculty members of the Graduate

Studies of Sulu State College

Statistical Treatment of Data

Both descriptive and inferential statistical tools were appropriately employed in the treatment of data that will be gathered for this study, namely:

1) For research question number 1, frequency counts and percentages were employed to determine the profile of respondents;

2) For research question number 2, mean and standard deviation were employed to determine the extent of attitudes toward sustainable agriculture concepts and practices among students of School of Agriculture of Sulu State College in the context of: Production efficiency, Economic viability, Environmental sustainability, and Social responsibility;

3) For research question number 3, t-test for independent samples was employed to determine the significant differences in the extent of attitudes toward sustainable agriculture concepts and practices among students of School of Agriculture of Sulu State College when data are grouped according to gender; and One-way Analysis of Variance (ANOVA) when data are grouped according to age, parent's educational attainment, and parent's average monthly income; and

4) For research question number 4, Pearson Product Moment Correlation Coefficient (Pearson r) was employed to determine the significant correlation between subcategories subsumed under the extent of attitudes toward sustainable agriculture concepts and practices among students of School of Agriculture of Sulu State College.

The following rating scales intervals were adopted in the analyses of the results of the computations yielded by both descriptive and inferential statistical tools:

1. Rating Scales Interval on respondents' extent of attitudes toward sustainable agriculture concepts and practices among students of School of Agriculture of Sulu State College based on modified 4-point Likert's Scale:

Point	Scale Value	Descriptors
5	4.50-5.00	Strongly Agree/Very high Extent
4	3.50-4.49	Agree/High Extent
3	2.50- 3.49	Undecided/Moderate Extent
2	1.50- 2.49	Disagree/Low Extent
1	1.00- 1.49	Strongly Disagree/Very Low Extent

This chapter showcases the presentations, analyses and interpretations of results based on the data obtained for this study. Specifically, it also tackles on studentsrespondents' demographic profiles in terms of gender, age, parent's educational attainment, and parent's average monthly income; The extent of attitudes toward sustainable agriculture concepts and practices among students of School of Agriculture of Sulu State College in the context of: Production efficiency, Economic viability, Environmental sustainability, and Social responsibility; and the significant difference in the extent of attitudes toward sustainable agriculture concepts and practices among students of School of Agriculture of Sulu State College when data are grouped according to: Gender, Age, Parent's educational attainment and Parent's average monthly income; and the significant correlation among the sub-categories subsumed under the extent of extent of attitudes toward sustainable agriculture concepts and practices among students of School of Agriculture of Sulu State College.

Established on the proper procedural scoring and statistical treatments of data gathered for this study, the following are the presentations, analyses and interpretations of results which correspond to each of the research questions:

1. What is the demographic profile of the student-respondents in terms of 1.1 gender; 1.2 age; 1.3 parents' educational attainment; and 1.4 parents' average monthly income?

1.1 In terms Gender

Table 1.1 shows the demographic profile of student-respondents in terms of gender. It can be gleaned from this table that out of 100 student-respondents, 49 (49.0%) are male and 51 (51.0%) are female. This means that, although with minor disparity, more than one-half of the agriculture students involved in this are female which is only a bit higher in number than male students. This result implies that female agriculture students at the School of Agriculture of Sulu State College constitute the great majority in number compared to their male counterpart for the Academic Year 2023-2024. Table 1.1 Demographic profile of student-respondents in terms of gender

Gender	Number of Students	Percent
Male	49	49.0%
Female	51	51.0%
Total	100	100%

1.2 On Age

1.3 Table 1.2 presents the demographic profile of student-respondents in terms of age.

It can be gleaned from this table that out of 100 student-respondents, 1 (1.0%) is within 20 years old & below of age bracket, 13 (13.0%) are within 18-19 years old, and 86 (86.0%) are within 20 years old and above. This

means that, great majority of agriculture students at the School of Agriculture of Sulu State College during the Academic Year 2023-2024 are within the age range of 20 years old & above.

Table 1.2 Demographic profile of student-respondents in terms of age

Age	Number of Students	Percent
17 years old & below	1	1.0%
18-19 years old	13	13.0%
20 years old & above	86	86.0%
Total	100	100%

1.3 In terms of Parents' Educational Attainment

Table 1.3 presents the demographic profile of college students at public higher education institutions in Sulu in terms of parents' educational attainment. It can be gleaned from this table that, of the 100 student-respondents, 38 (38.0%) students whose parents with elementary school level of education. While 25 (25.0%) whose parents with high school level of education. There are 354 (34.0%) students whose parents with college level and 3 (3.0%) students whose parents with post-graduate (master's/doctorate) level of education. This means that, more than one-third of the parents of agriculture students at the School of agriculture of Sulu State College involved in this study have elementary level of education. This result implies that most of these students have little chances of getting academic and technical support from their parents considering their parents' level of education.

Table 1.3 Demographic profile of student-respondents in terms of parents' educational attainment

Parent's Educational Attainment	Number of Students	Percent
Elementary	38	38.0%
High School	25	25.0%
College	34	34.0%
Postgraduate (Master's/ Doctorate	3	3.0%
Total	100	100%

1.4 In terms of Parents' Average Monthly Income

Table 1.4 portrays the demographic profile of college students at public higher education institutions in Sulu in terms of parents' average monthly income. It can be gleaned from this table that, of the 100 student-respondents, 94 (94.0%) of student respondents are whose parents' monthly earning pegged at 10,000 & below. While 4 (4.0%) whose parents within 10,001–20,000 bracket. There are only 2 (1.0%) students whose parents within 20,001 & above f average monthly income. This means that, agriculture students at the School of Agriculture of Sulu State College who were involved in this study are children of families whose monthly income within the lowest bracket. This result implies that most of these students could hardly cope with their financial needs for their education due to their parents' insufficient income.

Table 1.4 Demographic profile of student-respondents in terms of parents' average monthly income

Parent's Average Monthly Income	Number of Students	Percent
10,000 & below	94	94.0%
11,001 to 20,000	4	4.0%
20,001 & above	2	2.0%
Total	100	100%

2. What is the extent of attitudes toward sustainable agriculture concepts and practices among students of School of Agriculture of Sulu State College in the context of: 2.1 Production efficiency; 2.2 Economic viability; 2.3 Environmental sustainability; and 2.4 Social responsibility?

2.1 In terms of Production efficiency

Table 2.1 shows the extent of attitudes toward sustainable agriculture concepts and practices among students of School of Agriculture of Sulu State College in the context of Production efficiency. Under this category, students' assessment generated a total weighted mean score of 4.3875 with standard deviation of .49794 which is rated as Agree and interpreted as with High Extent. This result indicates that student-respondents involved in this study expressed agreement production efficiency can be enhanced by the role of technology to increase efficiency of agricultural production, meeting food needs with fewer farmers as outcome of technological progress, nationalization and regionalization of production, processing, and marketing of agricultural products, and the use of technology to make farm labor more rewarding and enjoyable, but not to replace it.

Specifically, from among the items under this category, student-respondents rated as Agree the following items: "Technology should be used as best as possible to increase efficiency of agricultural production", "Meeting food needs with fewer farmers is a positive outcome of technological progress", "Production, processing, and marketing of agricultural products are best done at national and regional level", and "Technology should be used to make farm labor more rewarding and enjoyable, but not to replace it".

Table 2.1 Extent of extent of attitudes toward sustainable agriculture concepts and practices among students of School of Agriculture of Sulu State College in the context of Production efficiency

	Statements	Mean	S.D.	Rating
1	Technology should be used as best as possible to increase efficiency of agricultural production.	4.2200	.97006	Agree
2	Meeting food needs with fewer farmers is a positive outcome of technological progress.	4.4700	.70288	Agree
3	Production, processing, and marketing of agricultural products are best done at national and regional level.	4.4200	.68431	Agree
4	Technology should be used to make farm labor more rewarding and enjoyable, but not to replace it.	4.4400	.75639	Agree
Total Weighted Mean		4.3875	.49794	Agree

Legend: (5) 4.50-5.0= Strongly Agree (SA); (4) 3.5-4.49 = Agree (A); (3) 2.5-3.49 = Undecided (U); (2)

1.50-2.49 = Disagree (D); (1) 1.0-1.49 = Strongly Disagree (SD)

2.2 In terms of Factors limiting the use of ICT by agriculture teachers with farmers

Table 2.2 shows the extent of attitudes toward sustainable agriculture concepts and practices among students of School of Agriculture of Sulu State College in the context of Economic Viability. Under this category, students' assessment yielded a total weighted mean score of 4.4871 with standard deviation of .37002 which is rated as Agree and interpreted as with High Extent. This result indicates that student-respondents involved in this study expressed agreement that sustainable agriculture concepts and practices can be enhanced by treating farming as the first and foremost a business like any other business, farmers' goals are to maximize the productivity, efficiency, and profitability of their farms, farmer's focus is on earning enough from farming to enjoy a good standard of living, farmers farm only as much land as they can personally manage, and equal distribution of the farmland to individual/corporation in order to encourage land ownership by as many people as possible.

Specifically, from among the items under this category, student-respondents rated as Agree the following items: "Farmers should purchase most of their goods and services they use on their farm", "Large scale farmers can best serve agriculture needs", and "The amount of farmland owned by an individual/corporation should be limited in order to encourage land ownership by as many people as possible".

Table 2.2 Extent of attitudes toward sustainable agriculture concepts and practices among students of School of Agriculture of Sulu State College in the context of Economic Viability

Statements		Mean	S.D.	Rating
1	Farming is first and foremost a business like any other business.	4.7980	.42809	Strongly Agree
2	The primary goal of farmers should be to maximize the productivity, efficiency, and profitability of their farms.	4.5700	.68542	Strongly Agree
3	The successful farmer is one who earns enough from farming to enjoy a good standard of living.	4.5900	.75338	Strongly Agree
4	Farmers should purchase most of their goods and services they use on their farm.	4.3800	.61595	Agree
5	Large scale farmers can best serve agriculture needs.	4.3900	.88643	Agree
6	Farmers should farm only as much land as they can personally care for.	4.5200	.64322	Strongly Agree
7	The amount of farmland owned by an individual/corporation should be limited in order to encourage land ownership by as many people as possible.	4.1600	.77486	Agree
Total Weighted Mean		4.4871	.37002	Agree

Legend: (5) 4.50-5.0= Strongly Agree (SA); (4) 3.5-4.49 = Agree (A); (3) 2.5-3.49 = Undecided (U); (2)

1.50-2.49 = Disagree (D); (1) 1.0-1.49 = Strongly Disagree (SD)

2.3 In terms of environmental Sustainability

Table 2.3 shows the extent of attitudes toward sustainable agriculture concepts and practices among students of School of Agriculture of Sulu State College in the context of Environmental Sustainability. Under this category, students' assessment yielded a total weighted mean score of 4.5150 with standard deviation of .32677 which is rated as Strongly Agree and interpreted as with Very High Extent. This result indicates that student-respondents

involved in this study expressed strong agreement that agriculture students in the School of Agriculture of Sulu State College believe that the way in which to enhance the sustainable agriculture concepts and practices can be done through soil and water conservation, specialized faming in one or at most a few crops, natural ecosystems and farm are in harmony with nature, use of natural

fertilizers/production methods such as manure, crop rotations, compost, and biological pest control, expansion of efforts to develop bio- technologies and other innovations in order to increase food supplies, modification of modern agriculture to become ecologically sound, and integration of agronomy and animal husbandry.

Specifically, from among the items under this category, student-respondents rated as Strongly Agree the following items: “Soil and water are the sources of all life and should therefore be strictly conserved”, “Farms should be specialized in one or at most a few crops”, “The key to agriculture’s future success lies in learning to imitate natural ecosystems and farm in harmony with nature”, “Farmers should use primarily natural fertilizers/production methods such as manure, crop rotations, compost, and biological pest control”, and “Agricultural scientists and policy-makers should expand efforts to develop bio- technologies and other innovations in order to increase food supplies”.

Table 2.3 Extent of attitudes toward sustainable agriculture concepts and practices among students of School of Agriculture of Sulu State College in the context of Environmental Sustainability

Statements		Mean	S.D.	Rating
1	Soil and water are the sources of all life and should therefore be strictly conserved	4.6900	.61455	Strongly Agree
2	Farms should be specialized in one or at most a few crops	4.5300	.57656	Strongly Agree
3	The key to agriculture’s future success lies in learning to imitate natural ecosystems and farm in harmony with nature.	4.5000	.71774	Strongly Agree
4	Farmers should use primarily natural fertilizers/production methods such as manure, crop rotations, compost, and biological pest control.	4.7500	.45782	Strongly Agree
5	Agricultural scientists and policy-makers should expand efforts to develop bio- technologies and other innovations in order to increase food supplies.	4.5900	.62109	Strongly Agree
6	Modern agriculture is a major cause of ecological problems and must be greatly modified to become ecologically sound.	4.2100	.89098	Agree
7	Most of farms should integrate agronomy and animal husbandry.	4.5200	.68873	Strongly Agree
8	Sustainability should consider only at farm level.	4.3300	.73930	Agree
Total Weighted Mean		4.5150	.32677	Strongly Agree

Legend: (5) 4.50-5.0= Strongly Agree (SA); (4) 3.5-4.49 = Agree (A); (3) 2.5-3.49 = Undecided (U); (2)

1.50-2.49 = Disagree (D); (1) 1.0-1.49 = Strongly Disagree (SD)

2.4 In terms of Social Responsibility

Table 2.4 shows the extent of attitudes toward sustainable agriculture concepts and practices among students of

School of Agriculture of Sulu State College in the context of in the context of Social Responsibility. Under this category, students' assessment yielded a total weighted mean score of 4.4520 with standard deviation of .57743 which is rated as Agree and interpreted as with High Extent. This result indicates that student-respondents involved in this study expressed agreement that agriculture students in the School of Agriculture of Sulu State College believe that to ensure sustainable agriculture concepts and practices can be coursed through agricultural education programs that should teach students about the interrelationships among the environment, agriculture, and people, agricultural education programs is to develop future leaders for the agricultural industry and rural communities, modernization of farm traditions and culture, and sustainability is the outcome of the collective decision-making that arises from interaction among stakeholders.

Specifically, from among the items under this category, student-respondents rated as Agree the following items: "Farm traditions and culture are outdated and of little use in modern agriculture", "Most of people should live in the cities and they should entrust farming to somebody that they can do it in the best manner", and "Sustainability is the outcome of the collective decision-making that arises from interaction among stakeholders".

Table 2.4 Extent of attitudes toward sustainable agriculture concepts and practices among students of School of Agriculture of Sulu State College in the context of in the context of Social Responsibility

Statements		Mean	S.D.	Rating
1	Agricultural education programs should teach students about the interrelationships among the environment, agriculture, and people.	4.6300	.66142	Strongly Agree
2	An important responsibility of agricultural education programs is to develop future leaders for the agricultural industry and rural communities.	4.5800	.65412	Strongly Agree
3	Farm traditions and culture are outdated and of little use in modern agriculture.	4.3800	.73553	Agree
4	Most of people should live in the cities and they should entrust farming to somebody that they can do it in the best manner.	4.2900	.93523	Agree
5	Sustainability is the outcome of the collective decision-making that arises from interaction among stakeholders.	4.3800	.73553	Agree
Total Weighted Mean		4.4520	.57743	Agree

Legend: (5) 4.50-5.0= Strongly Agree (SA); (4) 3.5-4.49 = Agree (A); (3) 2.5-3.49 = Undecided (U); (2)

1.50-2.49 = Disagree (D); (1) 1.0-1.49 = Strongly Disagree (SD)

3. Is there a significant difference in the extent of Sulu State College School of Agriculture students' perspective toward sustainable agriculture concepts when data are grouped according to: 3.1 Gender; 3.2 Age; 3.3 Parent's average monthly income; and 3.4 Parent's educational attainment?

3.1 By Gender

Table 3.1 shows the differences in the extent of Sulu State College School of Agriculture students' perspective toward sustainable agriculture concepts when data are grouped according to gender. It can be gleaned from this table that, except for "Production Efficiency" all other sub-categories subsumed under the extent of Sulu State College School of Agriculture students' perspective toward sustainable agriculture concepts whose mean differences, t-values, and p-values are not significant difference at alpha .05. This means that, generally male and female student-respondents do not differ in their assessment of the extent of sustainable agriculture concepts.

This finding implies that being a male student-respondent may not necessarily put him in vantage point towards assessing the extent of sustainable agriculture concepts than his female counterpart, or vice versa.

Hence, it is safe to say that variable gender has no significant mediation in the ways how student-respondents assess the extent of sustainable agriculture concepts. Therefore, the hypothesis which states that "There is no significant difference in the extent of Sulu State College School of Agriculture students' perspective toward sustainable agriculture concepts when data are grouped according to gender" is accepted.

Table 3.1 Differences in the extent of Sulu State College School of Agriculture students' perspective toward sustainable agriculture concepts when data are grouped according to gender

Variables Grouping		Mean	S. D.	Mean Difference	t	Sig.	Description
Production efficiency	Male	4.2704	.51244	-.22959*	-2.357	.020	Significant
	Female	4.5000	.46098				
Economic viability	Male	4.4140	.35981	-.14343	-1.966	.052	Not Significant
	Female	4.5574	.36951				
Environmental sustainability	Male	4.4745	.33655	-.07943	-1.218	.226	Not Significant
	Female	4.5539	.31549				
Social responsibility	Male	4.3592	.62846	-.18199	-1.588	.116	Not Significant
	Female	4.5412	.51427				

*Significant at alpha 0.05

3.2 By Age

Table 3.2 presents the differences in the extent of Sulu State College School of Agriculture students' perspective toward sustainable agriculture concepts when data are grouped according to age. It can be gleaned from this table that the values of F-ratios and P-values of all the sub-categories subsumed under the extent of sustainable agriculture concepts are not significant at alpha .05. This means that, despite student-respondents vary in age range generally, they do not differ in their assessment towards the extent of sustainable agriculture concepts. This result implies that being a 20 years old & above may not necessarily put an agriculture student in vantage point towards assessing the extent of sustainable agriculture concepts than those who are younger in age or 17 years old & below and 18-19 years old, or vice versa.

Meanwhile, it is safe to say that variable age has indeed significant mediation in ways how student-respondents assess the extent of sustainable agriculture concepts. Therefore, the hypothesis which states that "There is no significant difference in the extent of Sulu State College School of Agriculture students' perspective toward sustainable agriculture concepts when data are grouped according to age" is accepted.

Table 3.2 Differences in the extent of Sulu State College School of Agriculture students' perspective toward sustainable agriculture concepts when data are grouped according to age

Sources O	F Variation	Sum of Squares	df	Mean Square	F	Sig.	Description

Production efficiency	Between Groups	1.070	2	.535	2.210	.115	Not Significant
	Within Groups	23.477	97	.242			
	Total	24.547	99				
Economic viability	Between Groups	.567	2	.283	2.117	.126	Not Significant
	Within Groups	12.988	97	.134			
	Total	13.555	99				
Environmenta l sustainability	Between Groups	.539	2	.269	2.605	.079	Not Significant
	Within Groups	10.032	97	.103			
	Total	10.571	99				
Social responsibility	Between Groups	1.251	2	.625	1.910	.154	Not Significant
	Within Groups	31.759	97	.327			
	Total	33.010	99				

*Significant alpha .05

3.3 By Parent's Educational Attainment

Table 3.3 presents the differences in the extent of Sulu State College School of Agriculture students' perspective toward sustainable agriculture concepts when data are grouped according to parent's educational attainment. It can be gleaned from this table that, except for "Economic Viability" and "Social Responsibility" the values of F-ratio and P-value of all other sub-categories subsumed under the extent of sustainable agriculture concepts are indeed significant at alpha .05. This means that, the fact that student-respondents vary in the level of their parent's education, generally they indeed differ in their assessment towards the extent of sustainable agriculture concepts. This result implies that being a student-respondent who comes from parents with Post Graduate degree may possibly put him/her in a vantage point towards assessing perceiving the extent of sustainable agriculture concepts than those who come from parent's with elementary, high school, and college levels of education, or vice versa.

Meanwhile, it is safe to say that variable parent's educational attainment has indeed significant mediation in ways how student-respondents assess the extent of sustainable agriculture concepts. Therefore, the hypothesis which states that "There is no significant difference in the extent of Sulu State College School of Agriculture students' perspective toward sustainable agriculture concepts when data are grouped according to parent's educational attainment" is rejected.

Table 3.3 Differences in the extent of Sulu State College School of Agriculture students' perspective toward sustainable agriculture concepts when data are grouped according to parent's educational attainment

Sources O	F Variation	Sum of Squares	df	Mean Square	F	Sig.	Description
Production efficiency	Between Groups	1.738	3	.579	2.438*	.069	Significant

	Within Groups	22.809	96	.238			
	Total	24.547	99				
Economic viability	Between Groups	.027	3	.009	.064	.979	Not Significant
	Within Groups	13.528	96	.141			
	Total	13.555	99				
Environmenta Between Groups		.862	3	.287	2.843*	.042	Significant
L Within Groups sustainability		9.709	96	.101			
Total		10.571	99				
Social Between Groups		.640	3	.213	.632	.596	Not Significant
Within Groups responsibility		32.370	96	.337			
Total		33.010	99				

*Significant alpha .05

A Post Hoc Analysis using Tukey Test was conducted to determine which among groups classified according to Parents' Educational Attainment to have different levels of mean in areas subsumed under the extent of sustainable agriculture concepts when data are grouped according to parent's educational attainment.

The result of the analysis which is shown in Table 3.3.1 indicates that the difference in the means of the Production Efficiency and Environmental Sustainability when data are categorized according to parents' educational attainment is obtained by way of lower group mean minus higher group mean.

On Environmental Sustainability: It shows that groups of students' whose parents with Post-Graduate (Master's/Doctorate) level of education obtained the mean difference of .51974* with Standard Error of .19072 and p-value of .038 which is significant at alpha=.05 over the group of students whose parents with Elementary level of education.

So under this sub-category, no other group of students at the School of Agriculture of Sulu State College are supposed to have better ways of assessing the extent of sustainable agriculture concepts in terms of Environmental Sustainability than those agriculture students whose parents with Post-Graduate (Master's/Doctorate) degree.

Table 3.3.1 Post Hoc Analysis: Differences in the extent of sustainable agriculture concepts in terms of Environmental Sustainability when data are grouped according to parent's educational attainment

Dependent Variables	(I) Grouping by Parent's Educational Attainment	(J) Grouping by Parents' Educational Attainment	Mean Difference (I-J)	Std. Error	Sig.
Environmental Sustainability	Elementary	High School	.00974	.08189	.999
		College	-.03909	.07507	.954

		Post-Graduate (Master's/Doctorate)	.51974*	.19072	.038

* The mean difference is significant at the 0.05 level.

3.4 By Parent's Average Monthly Family Income

Table 3.4 presents the differences in the extent of Sulu State College School of Agriculture students' perspective toward sustainable agriculture concepts when data are grouped according to parent's average monthly family income. It can be gleaned from this table that the values of F-ratio and P-value of all the sub-categories subsumed under the extent of sustainable agriculture concepts are not significant at alpha .05. This means that despite the student-respondents vary in the range of their parent's average monthly family income, yet they do not differ in their assessment towards the extent of sustainable agriculture concepts. This result implies that being a student-respondent whose parents with average monthly family income of 30,001 & above may not necessarily put him/her in a vantage point towards assessing the extent of sustainable agriculture concepts than those students whose parents with 10,000 & below, 10,001 – 20,000, and 20,001 – 30,000 of average monthly family income, or vice versa.

Hence, it is safe to say that variable parent's average monthly family income has no significant mediation in ways how student-respondents assess the extent of sustainable agriculture concepts. Therefore, the hypothesis which states that "There is no significant difference in the extent of Sulu State College School of Agriculture students' perspective toward sustainable agriculture concepts when data are grouped according to parent's average monthly family income" is accepted.

Table 3.4 Differences in the extent of Sulu State College School of Agriculture students' perspective toward sustainable agriculture concepts when data are grouped according to parent's average monthly family income

Sources O	F Variation	Sum of Squares	df	Mean Square	F	Sig.	Description
Production efficiency	Between Groups	.115	2	.058	.229	.796	Not Significant
	Within Groups	24.432	97	.252			
	Total	24.547	99				
Economic viability	Between Groups	.062	2	.031	.224	.800	Not Significant
	Within Groups	13.493	97	.139			
	Total	13.555	99				
Environmenta Between Groups		.313	2	.156	1.478	.233	Not Significant
l Within Groups sustainability		10.259	97	.106			
Total		10.571	99				
Social Between Groups		.417	2	.209	.621	.540	Not Significant
Within Groups responsibility		32.592	97	.336			
Total		33.010	99				

*Significant alpha .05

4. Is there a significant correlation among the sub-categories subsumed under the extent of Sulu State College School of Agriculture students' perspective toward sustainable agriculture concepts?

Table 4 illustrates the correlation among the sub-categories subsumed under the extent of sustainable agriculture concepts as assessed by students of agriculture of Sulu

State College. It can be gleaned from this table that the computed Pearson Correlation Coefficients (Pearson r) between the sub-categories subsumed under the correlation among the sub-categories subsumed under the extent of sustainable agriculture concepts are moderately significant at alpha .05.

Specifically, the degrees of correlation among the sub-categories subsumed under the extent of sustainable agriculture concepts as assessed by students of agriculture of Sulu State College are as follows:

1) Moderate Positive correlation between the extents of Production efficiency and Economic viability, Environmental sustainability, and Social responsibility;

2) Moderate Positive correlation between the extents of Economic viability, Environmental sustainability, and Social responsibility;

3) Moderate High Positive correlation between the extents of Environmental sustainability and Social responsibility.

This result indicates that the group of agriculture students at the School of Agriculture of Sulu State College who assessed the extent of sustainable agricultural concepts in terms of Production efficiency as "Agree" or with High Extent are most probably the same group of agriculture students at the School of Agriculture of Sulu State

College who assessed the extents of Economic viability and Social responsibility as "Agree" or with High Extent, and Environmental sustainability as "Strongly Agree" or with Very High Extent, respectively.

Meanwhile, it is safe to say that, generally the extent of sustainable agricultural concepts in terms of Production Efficiency is highly correlated with the extents of Economic viability, Environmental sustainability, and Social responsibility.

Therefore, the hypothesis which states that, "There is no significant correlation among the sub-categories subsumed under the extent of Sulu State College School of Agriculture students' perspective toward sustainable agriculture concepts" is rejected.

Table 4. Correlation among the sub-categories subsumed under the extent of sustainable agriculture concepts as assessed by students of the School of Agriculture of Sulu State College

Variables		Pearson r	Sig	N	Description
Dependent	Independent				
Production efficiency	Economic viability	.524**	.000	100	High
	Environmental sustainability	.408**	.000	100	Moderate
	Social responsibility	.403**	.000	100	Moderate
Economic viability	Environmental sustainability	.539**	.000	100	High
	Social responsibility	.412**	.000	100	Moderate
Environmental sustainability	Social responsibility	.420**	.000	100	Moderate

*Correlation Coefficient is significant at alpha .05

Correlation Coefficient Scales Adopted from Hopkins, Will (2002):

0.0-0.1=Nearly Zero; 0.1-0.30=Low; .3-0.5 0=Moderate; .5-0.7-0=High; .7-0.9= Very High; 0.9-1=Nearly Perfect

This study aimed to determine the extent of extent of attitudes toward sustainable agriculture concepts and practices among students of School of Agriculture of Sulu State College during the Academic Year 2023-2024 and the significant differences and correlation among the variables subsumed under extent of attitudes toward sustainable agriculture concepts when data are grouped according to gender, age, parents' educational attainment, and parents' average monthly family income.

SUMMARY OF FINDINGS

This study revealed the following findings:

1) On demographic profile student-respondents:

1.1 By Gender;

Of the 100 student-respondents, 49 (49.0%) are male and 51 (51.0%) are female. This means that, although with minor disparity, more than one-half of the agriculture students involved in this are female which is only a bit higher in number than male students. This result implies that female agriculture students at the School of Agriculture of Sulu State College constitute the great majority in number compared to their male counterpart for the Academic Year 2023-2024.

1.2 By age:

Of the 100 student-respondents, 1 (1.0%) is within 20 years old & below of age bracket, 13 (13.0%) are within 18-19 years old, and 86 (86.0%) are within 20 years old and above. This means that, great majority of agriculture students at the School of Agriculture of Sulu State College during the Academic Year 2023-2024 are within the age range of 20 years old & above.

1.3 By parents' educational attainment:

Of the 100 student-respondents, 38 (38.0%) students are whose parents with elementary school level of education. While 25 (25.0%) whose parents with high school level of education. There are 354 (34.0%) students whose parents with college level and 3 (3.0%) students whose parents with post-graduate (master's/doctorate) level of education. This means that, more than one-third of the parents of agriculture students at the School of agriculture of Sulu State College involved in this study have elementary level of education. This result implies that most of these students have little chances of getting academic and technical support from their parents considering their parents' level of education.

1.4 By parents' average monthly family income:

Of the 100 student-respondents, 94 (94.0%) of student-respondents are whose parents' monthly earning pegged at 10,000 & below. While 4 (4.0%) whose parents within 10,001–20,000 bracket. There are only 2 (1.0%) students whose parents within 20,001 & above f average monthly income. This means that, agriculture students at the School of Agriculture of Sulu State College who were involved in this study are children of families whose monthly income within the lowest bracket. This result implies that most of these students could hardly cope with their financial needs for their education due to their parents' insufficient income.

2) On the extent of attitudes toward sustainable agriculture concepts and practices

2.1 Production Efficiency is rated as Agree or High Extent;

2.2 Economic Viability is rated as Agree or High Extent;

2.3 Environmental Sustainability is rated as Strongly Agree or Very High Extent;

2.4 Social Responsibility is rated as Agree or High Extent.

On the average, these results imply that agriculture students involved in this study expressed agreement that they have high extent of attitudes toward sustainable agriculture concepts and practices.

Sustainable agriculture is a type of agriculture that focuses on producing long-term crops and livestock while having minimal effects on the environment. This type of agriculture trees to find a good balance between the need for food production and the preservation of the ecological system within the environment (Schap and Cunninghane, 2023)

3) On Differences in the extent of attitudes toward sustainable agriculture concepts and practices

3.1 By Gender

There is no significant difference in the extent of Sulu State College School of Agriculture students' perspective toward sustainable agriculture concepts when data are grouped according to gender.

3.2 By Age

There is no significant difference in the extent of Sulu State College School of Agriculture students' perspective toward sustainable agriculture concepts when data are grouped according to age.

3.3 According Parents' Educational Attainment

There is indeed a significant difference in the extent of Sulu State College School of Agriculture students' perspective toward sustainable agriculture concepts when data are grouped according to parent's educational attainment. It was found out that those students whose parents with post-graduate (master's/Doctorate) degrees have better ways of assessing the extent of sustainable agriculture concepts in terms of environmental sustainability.

3.4 According to Parents' Average Monthly Income

There is no significant difference in the extent of Sulu State College School of Agriculture students' perspective toward sustainable agriculture concepts when data are grouped according to parent's average monthly family income.

In a study by Tourtelier et al (2023), it was concluded that a gender effect in the practice of sustainable agriculture exist. Attitudes and perceived behavioral control significantly affect farmers intent for sustainable practices. While gender lacks significantly influence (phung and Dao, 2024)

4) On the correlation among the subcategories subsumed under the extent of sustainable agriculture concepts

There is a moderate significant correlation among subcategories subsumed under the extent of sustainable agriculture concepts. The result implies that the group of agriculture students at the School of Agriculture of Sulu State College who assessed the extent of sustainable agricultural concepts in terms of Production efficiency as "Agree" or with

High Extent could possibly be the same group of agriculture students at the School of Agriculture of Sulu State College who assessed the extents of Economic viability and social responsibility as "Agree" or with High Extent, and Environmental sustainability as "Strongly Agree" or with Very High Extent, respectively.

A correlation between gender and sustainable agriculture, importance of care and differentiated socialization in choices that women make, and the role of access to the profession and working conditions, the specific profile of women involved in sustainable systems and potentially more welcoming dimension of the agroecological space existed (Tourtelier, et al, 2023)

CONCLUSIONS

The following are the conclusions forwarded based of the findings of this study:

1) Students of the School of agriculture of Sulu State College involved in this study are adequately represented in terms of gender, age, parent's educational attainment, and parent's average monthly income.

2) On the average, students of the School of Agriculture of Sulu State College expressed agreement that they have high extent of attitudes toward sustainable agriculture concepts and practices.

3) Generally, except for parent's educational attainment, demographic profiles in terms of gender, age, and parents' average monthly family income do not significantly mediate in ways how students of the School of Agriculture of Sulu State College assessed the extent of attitudes toward sustainable agriculture concepts and practices.

4) The group of agriculture students at the School of Agriculture of Sulu State College who assessed the extent of sustainable agricultural concepts in terms of Production efficiency as "Agree" or with High Extent could possibly be the same group of agriculture students at the School of Agriculture of Sulu State College who assessed the extents of Economic viability and Social responsibility as "Agree" or with High Extent, and Environmental sustainability as "Strongly Agree" or with Very High Extent, respectively.

5) This study seems to be aligned with Allahyari, M.S. (2008) model which is based on Connors et al. (2004) and Chen (2003) at the Ohio State University. The model is composed of the following constructs: production efficiency, economic viability, environmental sustainability and social responsibility.

RECOMMENDATIONS

Based on the above findings and conclusions, the following recommendations are hereby forwarded in this study:

1) Administration officials of the Sulu State College may adopt the findings of this study in their needs for more empirical data on the structuring of plans, implementation and evaluation of programs and policies geared towards ensuring effective, responsive and relevant program in agriculture.

2) Faculty of the School of Agriculture may utilize the results of this study as additional inputs in determining the factors affecting the efficient planning and implementation of program in agriculture whereby they can utilize such knowledge in the discharge of their instructional strategies.

3) Student-researchers may adopt the findings of this study when venturing on other avenues or research areas related to this field along the framework of determining some more aspects and factors that constrain ICT adoption in agriculture.

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