Degree of green supply chain and sustainability awareness of economic students in can tho city, vietnam

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Abstract

This article reported and discussed college students' knowledge and awareness of green supply chain management (GSCM) and sustainability issues. Economic students from universities in Can Tho city in Vietnam were selected and asked to participate in the study voluntarily. The study was realized with the participation of 534 students from different majors (international business (IB), business administration (BA), hospitality management (HM), and media management (MC)). The study applied analysis of variance (ANOVA) and radar chart to find out the disparity in awareness of economic student groups. The findings show that a minority of the economic students are aware main components of GSCM and sustainability and the important role of GSCM and sustainability in the future. There are significant differences in perception of various economic students (IB/BA, HM and MC) about GSCM and sustainability. The MC student body has the greatest level of consciousness of economic, environmental, and social issues. The energy of today's young people is crucial to the success of environmental programs tomorrow. The idea that sustainable environmental practices are beneficial for business is gaining traction. Despite only being in town for a short period, students may make a big difference by offering fresh approaches to sustainability and even starting profitable businesses.

Keywords: *Awareness, green supply chain, business*

Introduction

The people who live on this planet are currently confronted with the world's environmental crisis, which includes issues such as global warming, pollution of the water and air, the depletion of the ozone layer, and the destruction of tropical rain forests, which has led to a crisis in biodiversity. These problems have led to a crisis in the world's ability to support a diverse range of life. People are no longer able to survive as a direct consequence of all of these problems, regardless of whether one is referring to the global or the local setting. It was not just the responsibility of adults; rather, it was of the utmost importance for future generations, since they were the ones who would be the ones to face the issues of sustainability (Aza et al., 2020).

According to the findings of the United Nations research, there is a correlation between economic expansion and ecological sustainability. According to the definition provided by the Brundtland Commission, sustainable is development "development that meets the needs of

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the present without compromising the ability of future generations to meet their own needs" (United Nations General Assembly, 1987, page 15). It is generally accepted that this is what is meant by the term "sustainable development". The concept of sustainability is gaining popularity in a number of different spheres, including those that are related to the environment, health, politics, and research. There is a greater degree of understanding and agreement on the significance of environmental preservation. There has been a great deal of discussion on the interconnected nature of the economic, environmental, and social worlds in relation to the concept of sustainability. The implementation of energy efficiency measures and the use of renewable energy sources would lead to a reduction in energy consumption and air pollution, both of which must be reduced in order to achieve sustainability and enhance the quality of our environment. It is important for decision-makers in government, business, non-profit organizations, and educational institutions to give high priority to the implementation of practices and technologies that contribute to the environment's long-term viability (Israel et al., 2019).

Sustainability and GSCM awareness may be measured by appreciating knowledge and facts. This value includes many approaches for assessing stakeholders' understanding of sustainability. Industrialists (practitioners) understand sustainability, but applying it to social situations is difficult. This confuses "sustainable." So, there is a large knowledge gap between the general population and learners, and sustainable development demands the participation of everyone. It requires both well-known and productive people who are conscious of their daily actions and obligations and people who understand sustainability and how to apply it (Ibrahim, 2015).

A knowledge of GSCM and sustainability is one of the abilities a student should have in order to make a positive contribution to a caring community. Raising a student's awareness of sustainability may be done in a number of ways, one of which is by increasing the student's knowledge and understanding of what should and should not be done in terms of sustainability. The student will be more aware of the other students taking part and will do further research in order to get an idea of the environmental situation.

The study's goal is to examine how GSCM affects students' awareness of the need for environmental protection as they learn about global warming. In the context of sustainable development education, this research aims to characterize and classify the profile of GSCM sustainability awareness among economic students who have listened to lectures on supply chains, omnichannel marketing, logistics, and global procurement. This study also aims to describe major differences (business, hospitality management, and multimedia communication) in the sustainability awareness profile based on two categories: GSCM awareness, and sustainability awareness.

Materials and Methods

Sapling techniques

Within the context of an educational institution, this quantitative and cross-sectional descriptive research investigated students' levels of knowledge and awareness about sustainability as well as the environmental, economic, and social implications of the concept. The participants' attitudes and approaches to GSCM were also investigated for this research. A total of 534 students were purposefully selected from a variety of degree programs (Business Administration, International Business, Hospitality Management, and Multimedia Communication disciplines), but they all had to be economic students at one of the universities

in Can Tho city. These students were then given a questionnaire to complete in order to measure their knowledge and awareness of GSCM and sustainability themes, practices, and behaviors. Participants in this research were required to be at least 19 years old and belong to an academic category. The time period covered by the data collection was from November 1, 2022, to January 15, 2023.

2.2 Literature Review

Green Supply Chain Management (GSCM) is a more recent idea than traditional Supply Chain Management (SCM). Some literary reviews may be found on GSCM. Adding a "greening phase" to the supply chain operations across the board creates a more "integrated" and "co-operative" supply chain that, in the end, yields superior competitive advantages. This is what Green Supply Chain Management is all about (Rao, 2002). GSCM, as was said before, necessitates the simultaneous consideration of environmental and social concerns within commercial operations. Porter and van der Linde (1995) lay forth the fundamentals of "greening" as a "competitive endeavour". They believed that the competitiveness of businesses might be boosted by implementing green initiatives for the purpose of conserving resources, getting rid of waste, and increasing productivity. Thus, "greening" may lessen businesses' negative effects on the environment while simultaneously boosting productivity and opening up novel avenues to gain an edge in the marketplace (Hajikhani et al., 2012). Green Supply Chain Management (GSCM) is defined as a type of supply chain and environmental concern integration within the context of inter-organizational operations (Brindley & Oxborrow, 2014).

The process of learning about a company's commitment to sustainability is not one-sided. This might be influenced by a number of factors. According to reference (Hassini et al., 2012), sustainable techniques that are effective in one sector may not be applicable in another. The size of the firm is also a factor. The effect of company size on sustainability was studied by Tomomi (2010) and Lee (2008). Although there is a long-term advantage for large organizations to adopt sustainable practices, the rate of return on early adoption is not encouraging (Hassini et al., 2012). There is a lack of studies examining sustainability metrics and consciousness, despite the fact that the scale and sector of a company's operations are major factors. According to Gunasekaran and Kobu (2007), there are no efficiency metrics connected to sustainability have been published. According to reference (Hassini et al., 2012), no studies have comprehensively dealt with the three facets of sustainability (economy, society and environment). Glavic and Lukman (2007) constructed sustainability ideas, terminologies, and links to improve understanding and communication on the road to sustainable development. The impact that prints journals, periodicals, and textbooks have had on the development of sustainability science was evaluated (Hasna, 2010). Sustainable manufacturing was established as one of the most important challenges in the realm of sustainable development after a thorough study was performed (Garetti and Taisch, 2012). Sustainable production operations decision-making was supported by an analysis of sustainable design, sustainable manufacturing, and sustainable supply chain management, as well as the related difficulties, perspectives, and recent developments (Liu et al., 2011).

2.3 Data analysis

In order to reflect the first objective, descriptive statistics is a technique for summarizing, estimating, presenting, and describing sample characteristics. It includes statistical analysis, frequency distribution, percentage distribution, and use of the average value and standard deviation of narrative analysis displayed in tables and graphs in order to meet the study's

objectives. The values used in the study are mainly the highest, lowest, and average values of the components being studied. Moreover, the study applied ANOVA test to this objective. Fisher, a statistician, created the ANOVA (1919). It is a collection of statistical models and estimation procedures for analyzing how means differ from one another. The ANOVA test allows you to compare more than two groups at once to determine whether there is a relationship between them. The ANOVA formula's result, the F statistic, enables the analysis of numerous data sets in order to evaluate the variability within and across samples. A one-way ANOVA is used to investigate the relationship between the dependent and independent variables when there are three or more sets of data. Therefore, go to the Bonferroni test in Post Hoc if Sig > 0.05 in the Test of Homogeneity of Variances indicates that the variance between the two categories is similar; otherwise, assume that the variance between the two categories is different and move on to the Tamhane's test. Any comparison pair is considered to have a difference if its Sig value is less than 0.05. The value indicates that if there is a difference, the difference is utilized to decide which group is larger and which group is smaller. ANOVA assists in detecting correlations between variables, which leads to new discoveries that can be contributed to previous studies and improves the reliability of data and study conclusions.

Results and Discussion

Awareness of economic student about gscm

Table 1 provides more detailed information about the characteristics of economic students in the study area. The majority of respondents (63.3%) were female, while male was 36.7%. Based on different major groups of economic students, the maximum range in the business administration or international business (IB/BA) group was 73.60%, followed by the media communication (MC) group at 17.79%. The minimum range is the hospitality management (HM) group (8.61%).

Table 1: Demographic Characteristics of Student group

Description	N	Percentage (%)
Gender		
Male	196	36.70
Female	338	63.30
Major		
International Business/Business Administrator	393	73.60
Media Communication	95	17.79
Hospitality Management	46	8.61

Information on economic students' shares is presented in table 2. Overall, the opinions of the MC learner group relate to factors of GSCM higher than IB/BA and HM groups. For the internal environmental management (IEM), there was a statistically significant disparity at the 1% level of the Robust test. Although there was not a significant difference in awareness of IB/BA, HM, and MC groups about the factors of green procurement (GP), green manufacturing (GM), green distribution (GD), and environmental education, the MC student group showed a trend of better awareness in all factors compared to IB/BA and HM groups except GD element.
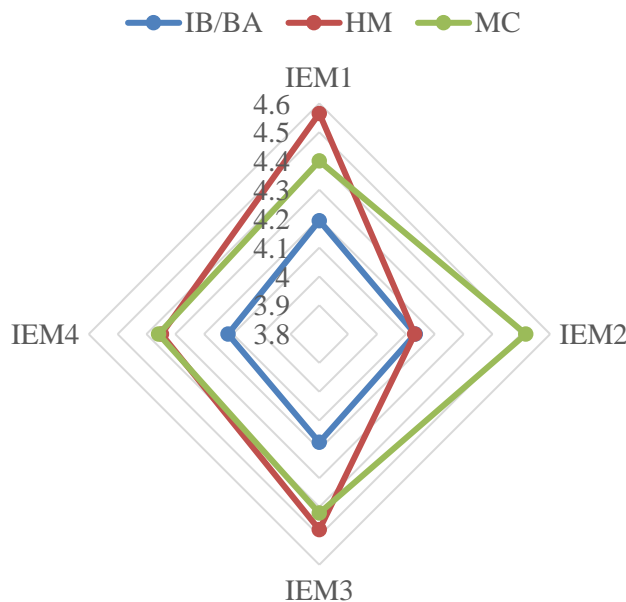
Table 2: Awareness of economic students about GSCM

Factors	IB/BA (n=393)	HM(n=46)	MC(n=59)	ANOVASig.F $\leq$ 0.05	Robust TestSig.Welch $\leq$ 0.05
Internal environment management (IEM)	4.15[a]	4.38[ab]	4.42[b]	-	***
Green procurement	4.07	4.09	4.21	NS	
Green manufacturing	4.05	4.01	4.29	NS	
Green distribution	4.14	4.31	4.18	NS	
Environmental education	4.15	4.17	4.24	NS	

Note: *, p-value < 0.1; **, p-value < 0.05; ***, p-value < 0.001. Significant at the 0.05 level. If the value of Levene is less than 0.05, the Rrobust test is used. If the value of Levene is less than 0.05, the Anova test is used. The numbers in the same row followed by different letters are significant at the 5% level via the statistical Anova or Robust test.

More specifically in the IEM (Figure 1), HM category showed impressive significance in awarding the item of the commit GSCM from senior managers (IEM1) while MC group was overwhelmingly greater in the item of support to GSCM from mid-level managers (IEM2) than IB/BA and HM groups. HM and MC groups are similar in that they are the same ideas on the items of establishing a cross-functional cooperation team (IEM3) and criteria for measuring green quality (IEM4). Awareness of the IB/BA student category was the lowest in all items of IEM among student categories.
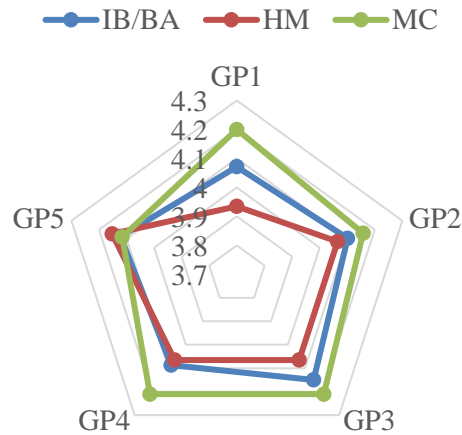

Figure 1: Awareness of economic students in IEM

Regarding green procurement, Figure 2 presents a remarkable rise in awareness of MC group in all components of GP. Though awareness of IB/BA group was less than MC group, it was better than HM group.

Awareness in green procurement (GP)

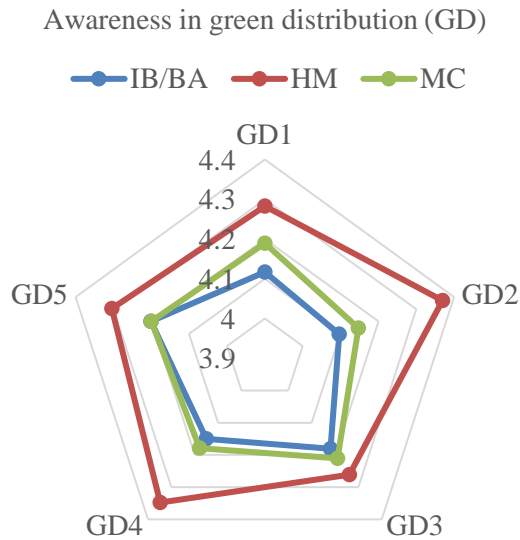**Figure 2:** Awareness of economic students in GP

Turning to green manufacturing (Figure 3), the MC student profile was the best awareness in the minimize the use of materials in the packaging (GM2) and reuse of products and recycled materials (GM3) whereas HM learner profile played the most important role in the life cycle assessment to evaluate environmental load (GM4). There was an idea convergence among IB/BA, HM, and MC profiles to ensure products have recyclable contents (GM1).

Awareness in green manufacturing (GM)
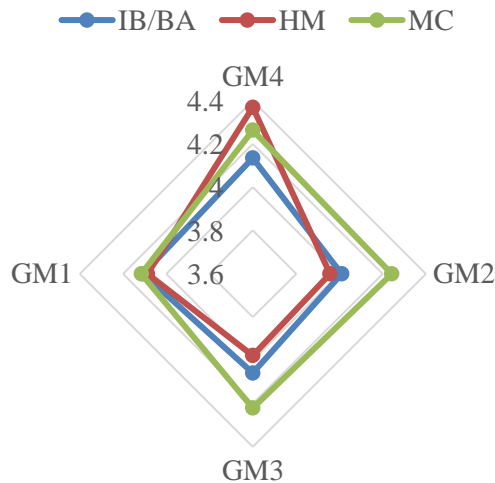
Figure 3: Awareness of economic students in GM

Figure 4 demonstrates the ideas of economic students related to green distribution. There was a considerable disparity in awareness of the HM student category compared to IB/BA and MC. This student group had the highest score in all components of GD, followed by the MC student category, and the lowest value is the IB/BA student category.

Awareness in green distribution (GD)

Figure 4: Awareness of economic students in GD

For environmental education (Figure 5), MC learner group continues to show their awareness well of the environmental aspect. The MC students were the highest score of all components of EE ideas compared with IB/BA and HM groups, in which the item of sustainability for executives (EE2) witnessed a similar opinion in both HM and MC.

Awareness in environmental education (EE)
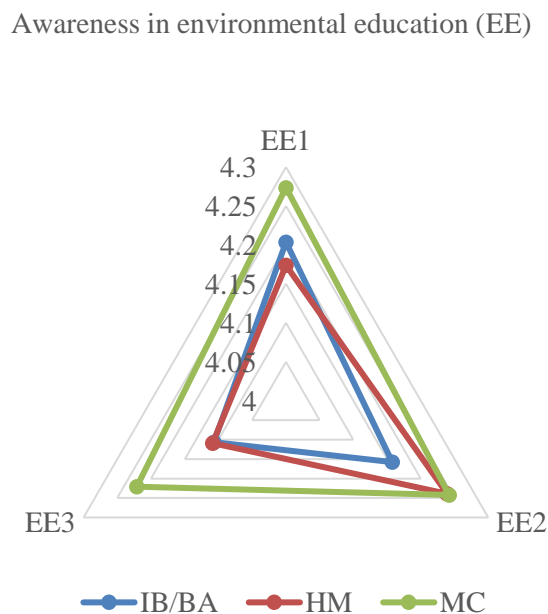
Figure 5: Awareness of economic students in EE

Awareness of economic student about sustainability

From previous research papers, some internal factors (Strengths and Weaknesses) affect sustainable performance. In which, the factors of strength that bring sustainable performance include Reducing cost for environment-friendly input procurement (SE1), Reducing the cost of delivery and inventory (SE2), Reducing fee to waste discharge (SE3), Reducing fines for environment accidents (SE4), Increasing demand flexibility, delivery flexibility, and production flexibility (SE5), Ensuring procurement and delivery on time (SE6). For the environmental aspect, there are factors such as Optimizing processes for waste and emission reduction, pollution control (SEN1), Recognizing products of eco-labeling, recycled material, and design-for-assembly (SEN2), Saving energy consumption and recycling process (SEN3), Encouraging green and clean technologies to use (SEN4). Factors affecting social performance include Increasing social and environmental responsibility (SS1), Increasing organizational capability (SS2), Increasing employees' motivation, health, and Safety (SS3), and Increasing customer interest and satisfaction with green products (SS4).

On the other hand, the factors of weakness affecting the economic aspect include constrained finance/capital (WE1), Lack of organization encouragement (WE2), and Hesitating to convert to new systems (WE3). The environmental aspect includes Hesitating to change GSCM from the supplier (WEN1), Lack of sustainable guidance (WEN2), and Lack of sustainability training courses/consultancy/mentor (WEN3). On the other hand, Lack of corporate social responsibility (WS1), Lack of top management commitment, and Do not want technology advancement adoption (WS2) are barriers to social performance.

Table 3 compares the perception of economic students about the sustainability of the internal factors (strengths and weaknesses). The results show a significant difference among the three groups of economic students for the economic performance (EP) factor (with Levene Sig = 0.880) and environmental performance (ENP) with (Levene Sig =0.031). Specifically, the mean value of MC group was the highest 4.10 for economic performance and 4.23 for environmental performance. The study also found a significant difference in the environmental performance of the MC group and IB/BA group at a 5% significance level.

Table 3: Economic students, awareness about internal factors of sustainability

Factors	IB/BA (n=393)	HM(n=46)	MC(n=59)	ANOVASig.F ≤ 0.05	Robust TestSig.Welch ≤ 0.05
Economics Performance (EP)	4.04	3.93	4.10	*	
Environmental Performance (ENP)	4.04[a]	3.97[ab]	4.23[c]		**
Social Performance (SP)	4.12	4.10	4.22	NS	

Note: *, p-value < 0.1; **, p-value < 0.05; ***, p-value < 0.001. Significant at the 0.05 level. If the value of Levene is less than 0.05, the Rrobust test is used. If the value of Levene is less than 0.05, the Anova test is used. The numbers in the same row followed by different letters are significant at the 5% level via the statistical Anova or Robust test.

The radar chart (Figure 6) provides information on shares of economic students associated with the internal factors of sustainability. Generally, there was not a substantial difference in awareness about the internal factors of sustainability among IB/BA. HM and MC groups.

Internal factor of sustainability (Student)
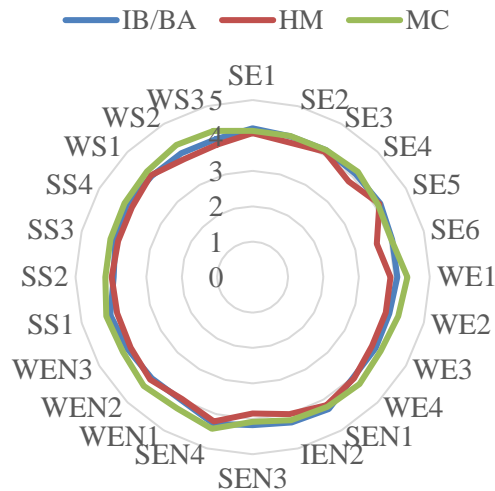
Figure 6: Awareness of internal factor of sustainability

The economic aspect includes Promoting green images, global marketing and competition (OE1), Capturing demand for an environment-friendly product market (OE2), Obtaining a certificate for green product warranty (OE3), and Attracting investors and shareholders. (OE4). The environmental performance aspect includes Increasing green business strategies (OEN1), Increasing efficiency in scarcity of Resources, higher waste generation and waste disposal problem (OEN2), Adapting to global climate pressure and ecological change (OEN3), Contributing to government rules and legislation system related to sustainability (OEN4). In addition, other opportunistic factors for improving social performance include Support from green movement activism by non-government organizations (OS1) and Creating trust in society or the public (OS1). OS2), Get government support for enforcement (OS2).

On the other hand, external sustainability factors that threaten sustainable performance in the economic aspect include Impact economic uncertainty (TE1), Impact market competition (TE2), and Need for big investment (TE3). Barriers to environmental aspects include Poor legislation related to sustainability (TEN1), Lack of effective environmental measures (TEN2), and Lack of government support system (TEN3). Social aspects include Weak pressure from society (TS1), Lack of quality human resources (TS2).

The results of the ANOVA (Table 5) revealed significant differences among the student groups in terms of sustainability awareness. Economic performance (Levene Sig=0.282), environmental performance (Levene Sig=0.180), and social performance (Levene Sig = 0.604) were all shown to have significantly different average student perceptions of external elements (opportunities and threats) of sustainable performance. By comparing the opinions of all three student subgroups, it becomes clear that the MC students have the most favorable view of economic performance (4.25), followed closely by the IB/BA students (4.17). There was a discrepancy in how people rated environmental performance and social performance, with mean MC values of 4.3 and 4.29, respectively. As a result, we need to spread the word far and wide about national competitiveness and sustainable development; we need to connect the dots between economic growth, environmental preservation, and social progress. able to draw on resources outside oneself to counter potential dangers.

Table 5: Economic students, awareness about external factors of sustainability
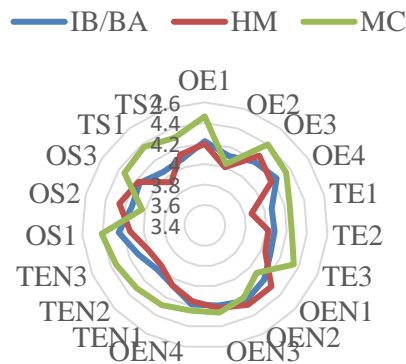
Factor	IB/BA (n=393)	HM(n=46)	MC(n=59)	ANOVASig.F $\leq$ 0.05
Economics Performance (EP)	4.17	4.02	4.25	*
Environmental Performance (ENP)	4.13[a]	4.09[ab]	4.31[b]	**
Social Performance (SP)	4.13[a]	4.12[ab]	4.29[b]	**

Note: *, p-value < 0.1; **, p-value < 0.05; ***, p-value < 0.001. Significant at the 0.05 level. If the value of Levene is less than 0.05, the Rrobust test is used. If the value of Levene is less than 0.05, the Anova test is used. The numbers in the same row followed by different letters are significant at the 5% level via the statistical Anova or Robust test.

More detailed, Figure 7 indicates that the student's selection propensity for external factors for the sustainable performance of the MC group has the highest impact on each factor. In general, these three groups of students showed a different selection trend. Specifically, the MC group tended to choose OE1, OE3, TE3, OEN3, and OS1 which reached a value of 4.4 or higher. The HM group tended to favor OS1, OE1, and OE4. As for the factor, IB/BA students tend to make other choices that are similar in choice, but shown in some choices OS1, OE1 achieved a value of 4.2.

In general, students had similar opinions on the internal causes, but their answers diverged when the topic of sustainability was brought up. It's worth noting that students from a wide variety of disciplines were able to apply the notion of sustainability to their own work. All the future educators said they will educate their own pupils about sustainability, and students in the IB/BA, HM, and MC programs said they had learned that environmental concerns should be weighed alongside economic and social concerns. In particular, MC students paid attention remarkably to three main pillars of sustainability (economic, environmental, and social aspects).

Figure 7: Awareness of external factor of sustainability

It is important to note that there have been a number of recent sustainability measures implemented at the university level. The value of a sustainable environment has been an important issue for millennials. Sustainability efforts or studies should involve students to design, develop, implement, and lead most of the sustainability efforts. Students were aware of various GSCM and sustainability. This could be attributed to the lack of obvious effort that promotes sustainability and integration of sustainability into various program curricula.

The research provided a total of 43 indicators of the various parts of the triple bottom line. According to the reviewed material, raising student awareness about the need for sustainable supply chain management is a critical challenge. The findings showed that IB/BA student group obtains a lower awareness level of GSCM and sustainability than the HM and CM student groups. Awareness levels of college students are different from those of people in the community. If education helps students learn more about sustainability in the classroom, they might be more likely to use sustainable ideas and methods in their own lives. Even though there are three parts to sustainability (economic, social, and environmental issues), universities often use only the economic and social aspects, which students are less interested in. A study of economics students shows that students fully understand what it means to be sustainable. The finding agrees with Labog's (2017) research, which shows that learning about ideas and activities in school can help people connect with the environment and become more aware of sustainability. As students learn more, they will feel more like they know what to do. The result is consistent with what Sivamoorthy, et al. (2013) presented, which is that knowledge doesn't change how people feel or act, but it does change how students see practice.

Additionally, this research reveals that students have a strong grasp of socio-economic and environmental issues, but lack practical experience owing to disparities in perception with experts. Hence, in addition to theoretical knowledge, universities should give students more experience in order to induce the necessary lifestyle or behaviour change, so that students are more aware of GSCM practices (Hamid et al., 2017). This level of sustainability consciousness must be developed mostly via college curriculum. In order to induce the necessary lifestyle or behaviour change, so that students are more cognizant of sustainable practices, universities must give students more than just theoretical material (Hamid et al., 2017). To improve students' knowledge of sustainability and GSCM, instructors should provide criteria that students do not have. Students must be mindful while discussing or delivering information on environmental concerns and when engaging in activities that raise knowledge about sustainable performance. The students may get environmental and cognitive instruction at home and at the university.

Conclusions

The awareness of economic students in sustainable development among students is high. Among the three categories of students, MC student awareness is the highest in all economic, environmental, and social aspects. This means that MC students have better attention and awareness compared to IB/BA and HM students.

The study was out to assess undergraduate economics students' grasp of GSCM and sustainability issues. According to the data, the majority of students surveyed felt that sustainability is crucial. Students' reports of GSCM often include discussions of IEM, GP, GM, GD, and EE, as well as economic, environmental, and social sustainability issues. This positive outcome suggests that college-aged people are responsive to national, regional, and local sustainability initiatives, marketing, and promotions. These findings demonstrate the extent to which pupils are aware of and concerned about GSCM and sustainability issues. Unfortunately, IB and BA students lacked a basic familiarity with sustainability and were not aware of pertinent activities, and institutional resources. Universities have the potential to create a healthier and more sustainable world by preparing and motivating students to believe in and engage in the necessary measures, activities, and initiatives to bring about economic, environmental, and social change.

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