1. INTRODUCTION

1.1. Background of the Study

As stated in an overview in the Global Opportunity Analysis and Industry Forecast in Green Technology and Sustainable Market for 2020–2027 by Borasi et al. (2020), “various governments across the globe are investing heavily in green technology to conserve nature and reduce the negative impact on the environment, which is boosting the growth of the market.” Many global efforts and activities require these technologies as they concentrate on solving global issues centered around environmental problems. However, to solve these issues and minimize their effects, countries have to spread awareness to the youth through Science, Technology, Engineering, and Mathematics (STEM) education and emphasize the importance of the disciplines associated with this type of education in planning and initiating such efforts.

Aside from emphasizing its role as one of the critical components in solving the said issues, technologies, specifically digital, have shaped the world and how people manage information. Although it increased the world’s complexity, the change implies that it is more than necessary for the youth to acquire and nurture skills such as problem-solving, critical thinking, and gathering and evaluating information to make a well-informed decision (U.S. Department of Education, n.d.). These skills, among others, are called 21st Century Skills, which are developed and enriched mainly through STEM Education. Since technology in education is fast advancing due to innovations...
contributing to increased accessibility of knowledge, students now have a much greater capacity to process large amounts of information. STEM strands and courses utilize these technologies to help students improve their 21st Century Skills in preparation for tertiary level STEM-related courses and future professions (Estonato, 2017).

Looking at the background of education in the Philippines, it has only been eight years since the implementation of the Republic Act No. 10533, containing the K to 12 system that adds two more years in high school (i.e., senior high). For these additional years, the DepEd’s purpose is to strengthen, improve, and develop the learners, prepare them for future employment, and produce more excellent and competent students that can compete globally in academic excellence. Tracks with specialized disciplines were included, and students had the freedom to decide what path to take. Among the tracks, strands under the Academic Track (i.e., STEM, ABM, HUMSS, and GAS) are the most preferred for incoming Grade 11 students (Malonda, 2017).

Moreover, Rask (2010) states that STEM education is one of the most in-demand strands. K-12 curricula made students competitive, particularly in the four STEM fields, causing the Philippines’ educational system to develop constantly and make students more globally competitive. However, STEM students do not complete this college requirement due to financial constraints, parental influence, and other issues affecting the number of students who finished senior high school.

1.2. Review of Related Literature

According to many studies related to factors that influence students’ decision to pursue the STEM strand, common findings dictate that the primary reason for choosing the particular strand is career choice or aim, which is based on personal aspirations, preferences, interests, and influences (Agamata et al., 2018; Rafanan et al., 2020; Suero et al., 2020). In addition, National reports proved that a parent’s influence is essential for the students’ education and is one of the factors considered in pursuing the strand (Craig et al., 2021).

Furthermore, recent studies have proven that STEM programs, activities, and education are necessary to increase students’ interest and positive perception of STEM strand and courses. This statement agrees with Vennix et al.’s (2018) conclusion that the STEM-related outreach learning program and the environment they associated their participants with were positively perceived. These STEM-related activities help communicate the importance of its applied disciplines in enriching 21st-century skills to students (El-Deghaidy & Mansour, 2015; Roberts et al., 2018).

Additionally, Artika et al. (2021) state that students are interested in participating in STEM-based learning activities because it trains them to think critically, creatively, and systematically. Other related literature points out that associating STEM education with its daily relevance to life and real-world problems through involvement is one of the best ways of positively influencing their perception of the strand. As concluded by these studies, using personal significance, real-world situations, participation, exposure, and hands-on experience help equip students with awareness, knowledge, and a clear perception of the strand (Dawes et al., 2015; Hacioglu & Gulhan, 2021; Sari et al., 2018).

Overall review and evaluation of prior studies related to the factors affecting students to pursue the STEM strand indicate that there is still lacking local studies concerning this topic as most related studies are conducted from foreign countries. While most of these studies focus only on the factors, there are also insufficient studies about students’ satisfaction concerning the factors that led them to select the STEM strand. Also, the numerous related studies are focused only on two general factors (e.g., Gender and Ethnicity, Personality and Socioeconomic Factors, and others). Aside from these, prior studies have limited respondents, making them unreliable. Hence, this study will provide more potential factors that explain why senior high school students choose the STEM strand and include information about their satisfaction with the STEM strand based on these factors. This study will provide and utilize enough respondents to strengthen its reliability.

1.3. Statement of the Problem

Considering that choosing a strand requires evaluating different factors, it can be challenging for students to decide which track and strand they want to pursue in senior high school. As for this study, many students prefer to choose STEM as their strand for the academic track. However, not all students are passionate about this strand, which mainly affects their interest and academic performance. Hence, this study aimed to determine the factors that influence students to pursue STEM as their strand. These factors will be divided into two: personal and institutional factors. In addition, since
part of the influence of the factors on students concern their satisfaction level towards the strand, this study also aimed to determine their satisfaction level. Lastly, since a significant number of studies point out that Career Aims are the main deciding factor, this study also aims to discover the Career Aims of the students. Thus, the study sought to address these questions:

1. What factors lead SLU LHS-SH students to choose STEM as their strand in terms of (a) personal and (b) institutional factors?
2. What is the level of satisfaction of SLU LHS-SH students in their chosen strand, STEM, based on the (a) personal and (b) institutional Factors?
3. What are the Grade 12 students’ Career Aims to accomplish by pursuing the STEM strand?

1.4. Significance of the Study

Planning a students’ life track is essential for them to succeed in the future. Since many students end up in the STEM strand, this study will contribute to the information about why this may be and help them sort their perceptions and expectations upon taking the said strand. Aside from them, the results of the study will be beneficial to their parents by providing them with a clear understanding of the factors they should consider to guide their children when choosing the STEM strand. It will also help the teachers better understand how to assist their students in choosing a career that suits them by integrating career plans with the curriculum and employing improvements in teaching to increase the satisfaction of their students towards the strand.

This study may become a basis for educational institutions, especially their guidance council, in creating plans, programs, and activities that apply STEM disciplines to influence positive perceptions and attitudes towards STEM strands and courses. It will also assist guidance counselors in setting a student on a clear path and orienting them with possible future careers using the knowledge about the factors, level of satisfaction, and career aims that can influence their decisions. Additionally, this study will serve as a foundation for future researchers to go beyond the scope of this study and formulate new theories and ideas about the nature of the factors affecting students to choose the said strand.

1.5. Scope and Delimitation

This study considers all factors that influence a student’s decision to choose the STEM strand, whether personal or institutional. It does not cover the factors that influence students’ considerations for other strands under the academic track, such as ABM and HUMSS. Moreover, the students’ Career Aims that this study seeks to know pertain to their preferred college course and future careers, excluding their aims as they become professionals.

2. METHODOLOGY

The variables included in the study are the factors (independent) and the student’s decision to select the STEM strand (dependent). With these two, the study was anchored on the conceptual framework below:

**Figure 1**

**STEM Factors Model**

When students choose a track or strand in senior high school, they must consider specific factors that fit their given abilities, interests, situation, and other criteria. A review of the findings on strand-deciding factors from related studies enumerated the following: education, family income, parental occupation, institution type, school preference, skills, abilities, academic environment, strand offers and availability, strand popularity, past academic performance, aptitude test results, peer and family influence, and strand interest and perception.

Moreover, based on the literature review, it was established that a student’s Career Aim is the primary factor that prompts them to choose the STEM strand. Skills taught in the STEM strand, such as critical thinking and problem-solving, apply to practically all jobs and are in high demand for the majority. Medicine was the most desired career, followed by engineering, law, police, and architecture (Kizilay et al., 2019).

Students’ satisfaction is a short-term attitude resulting from a student’s evaluation of educational
experience, services, and facilities (Weerasinghe & Fernando, 2017). It is influenced by personal and institutional factors (Appleton-Knapp & Krentler, 2006, as cited in Weerasinghe & Fernando, 2017). It also assists in student retention and academic achievement (Dhaqane & Afrah, 2016). If a student is not satisfied with what strand he/she pursues, the student may perform poorly on his/her academic requirements, negatively affecting his overall performance, engagement, and interest in the strand.

Regarding the study’s design, this research adapted descriptive quantitative since the variables were measured quantitatively. In the study’s case, answering the problems or questions as to why many students desire the STEM strand for the academic track requires a descriptive approach in stating the findings and conclusions.

The locale for this study is SLU LHS-SH. It was accomplished during the second grading period of the 1st semester of the academic year 2021–2022 amidst the COVID-19 pandemic. The chosen population consists of 650 grade 12 students of the STEM strand with 15 sections. Since the school implemented an online and modular learning mode in compliance with the protocols, the researchers included both Online-based learning (OBL) and Correspondence-based learning (CBL) students to be part of the sample. Out of the 650 students, the study accounted for 248 for the sample size using Slovin’s formula with a 5% margin of error. The researchers decided to exclude the students who participated in the reliability testing. They then divided the sample size into 15 and employed simple random sampling.

The primary gathering instrument used in the data gathering was a research-based and pilot-tested survey questionnaire created by the researchers using Google forms. It incorporated multiple response types, with choices based on prior studies’ findings and an option to specify unlisted choices to answer the first and third research questions. As for the second research question, the type of questionnaire used was a 4-point Likert scale, with a Chronbach’s Alpha value of 0.77, to determine students’ level of satisfaction.

The data gathering comprised four steps: asking permission, pilot testing, dissemination, and encoding and tallying. A formal letter was sent to the principal asking to permit the conduct of the study. With the consent, the pilot testing commenced to measure the reliability of the survey questionnaire and determine errors or unclear parts. Then,

after ensuring that the survey questionnaire was reliable and error-free through revisions, the survey questionnaires were disseminated online via Facebook Messenger. After two weeks, the responses were tallied and encoded for analysis.

Lastly, the researchers employed descriptive statistics for data analysis to provide basic information about the variables in a dataset and highlight the variables’ potential characteristics. The specific descriptive statistics used for research questions 1 and 3 was the measure of frequency. For the second research question, both the measure of frequency and central tendency (i.e., mean) was utilized. The following scale range interpretation was accounted for in the analysis of the weighted mean: >3.25 is Very Satisfied; 2.50–3.25 is Satisfied; 1.75–2.49 is Dissatisfied; <1.75 is Very Dissatisfied.

3. RESULTS AND DISCUSSION

Table 1
Personal Factors

<table>
<thead>
<tr>
<th>Factors</th>
<th>Total</th>
<th>actors</th>
<th>Total’</th>
</tr>
</thead>
<tbody>
<tr>
<td>Career Aim</td>
<td>202</td>
<td>ast Grades</td>
<td>71</td>
</tr>
<tr>
<td>Family and/or Peer</td>
<td>118</td>
<td>school Preference</td>
<td>71</td>
</tr>
<tr>
<td>Motivation</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Abilities and Skills</td>
<td>109</td>
<td>eer Influence/ressure</td>
<td>65</td>
</tr>
<tr>
<td>Subject Interest/</td>
<td>102</td>
<td>brand Popularity</td>
<td>58</td>
</tr>
<tr>
<td>Preference</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Strand Perception</td>
<td>98</td>
<td>parental Status and</td>
<td>49</td>
</tr>
<tr>
<td>Education Results</td>
<td>96</td>
<td>amily Income</td>
<td>27</td>
</tr>
<tr>
<td>Family Influence/</td>
<td>93</td>
<td>gender Stereotype</td>
<td>3</td>
</tr>
<tr>
<td>Pressure</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

*Number of Students who considered the factor

Table 2
Institutional Factors

<table>
<thead>
<tr>
<th>Factors</th>
<th>Total</th>
<th>Factors</th>
<th>Total’</th>
</tr>
</thead>
<tbody>
<tr>
<td>NCAE Results</td>
<td>96</td>
<td></td>
<td>27</td>
</tr>
<tr>
<td>Financial Status</td>
<td>8</td>
<td></td>
<td>8</td>
</tr>
<tr>
<td>Parental Income</td>
<td>7</td>
<td></td>
<td>7</td>
</tr>
</tbody>
</table>


Table 3

<table>
<thead>
<tr>
<th>Education Factor</th>
<th>Number of Students (N)</th>
</tr>
</thead>
<tbody>
<tr>
<td>School Rating and Performance</td>
<td>191</td>
</tr>
<tr>
<td>Strand Offers and Availability</td>
<td>141</td>
</tr>
<tr>
<td>School Location</td>
<td>128</td>
</tr>
</tbody>
</table>

*Number of Students who considered the factor*

Tables 1 and 2 summarize the data collected for the research question 1. As shown, Career Aims under the personal factors, and School Rating and Performance under the institutional factors were considered by many in pursuing the STEM strand. Additionally, when asked about the most significant factor, Career Aims came out on top.

These statements affirm the prior studies of Agamata et al. (2018), Rafanan et al. (2020), and Suero et al., which concludes that Career Aim is the primary factor students consider when choosing their strand and course. It is their belief that pursuing the strand will help them attain their dream career (Agamata et al., 2018). Additionally, most of the students prefer to pursue STEM-related courses in college. Suero et al. (2020) mentioned that students are interested in pursuing STEM as it provides a wide variety of professions that can contribute to the continuous growth of the economy.

Along with their Career Aims and the consideration the students have for the School’s Rating and Performance, it is also worth noting that there are a significant number of factors that students consider compared to other studies that only listed a few. However, combining all the findings from the literature review affirms the factors included in the tables.

Table 3

<table>
<thead>
<tr>
<th>Student’s Satisfaction</th>
<th>Numbers of responses</th>
<th>WM*</th>
<th>SI**</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Family and peers’ influence</td>
<td>12 32 143 54</td>
<td>2.97</td>
<td>S</td>
</tr>
</tbody>
</table>

*Weighted Mean

**Mean Range Scale Interpretation:>3.25 is Very Satisfied (VS); 2.50–3.25 is Satisfied (S); 1.75–2.49 is Dissatisfied (D); <1.75 is Very Dissatisfied (VD)

Table 3 shows that the majority of the respondents identified themselves, on average, as Satisfied with all the factors they have considered. Furthermore, they were Very Satisfied with the strand based on personal factors, especially their Career Aims. However, most of the students were Dissatisfied with school fees.

Although researchers have yet to conduct studies regarding satisfaction levels from strand-deciding factors, the findings imply that satisfaction is an antecedent and subsequent to the perception of the strand. As a personal factor, a positive strand perception improves a student’s satisfaction as well as academic performance and vice versa (Dawes et al., 2015; Hacioglu & Gulhan, 2021; Sari et al., 2018). Additionally, with Career Aims as the most considered and the only personal factor with a Very Satisfied rating, students were keen and well-informed about the skills and knowledge that the strand will equip them for their future courses and careers. Moreover, their dissatisfaction with school fees may have to do with the miscellaneous fees they paid pay despite distance learning.
4. CONCLUSIONS

The personal factors that led students to choose the STEM strand are Career Aims, Family and Peer Motivation, Abilities and Skills, Subject Interest/Preference, Strand Perception, NCAE Results, Family Influence/Pressure, Past Grades, School Preference, Peer Influence/Pressure, Strand Popularity, Parental Occupation, and Financial Status and Family Income. On the other hand, they considered School Rating and Performance, Strand Offers and Availability, School Location, School Programs and Activities, School Facilities, and School Type for the institutional factors. Moreover, it depends on how they weigh these factors with their decision. Most notably, Career Aims and School Rating and Performance have the highest significance for why they opted for the strand.

The students are satisfied with their strand based on the overall factors they have considered. Moreover, they are very satisfied based on their Career Aims and personal factors in general. On the contrary, the students are dissatisfied with the school feels, implying that the amount they paid for their education did not meet their quality expectations and assessment.

The top 10 career aims in decreasing order are Medicine, Engineering, Information Technology, Pure Sciences, Computer Science, Mathematics, Astronomy, Architecture, Law, and Aviation. Most students want to pursue Medicine and Engineering courses and careers in the future. Additionally, almost all STEM students have Career Aims aligned to the STEM strand.

5. ACKNOWLEDGMENTS

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6. REFERENCES


Kizilay, E., Yamak, H., & Kavak, N. (2019). High school students that consider choosing science, technology, engineering, and mathematics (STEM) fields for their university Education. Science Education International, 30(1), 4–10. https://doi.org/10.33828/sie.x30.11.1


