



LAGUNA STATE POLYTECHNIC UNIVERSITY
COLLEGE OF COMPUTER STUDIES DEPARTMENT
Brgy. Bubukal Sta. Cruz, Laguna



**Factors Affecting the Decision connected the
chosen Track Of 3rd Year CCS-BSIT Students of
Laguna State Polytechnic University-SCC**

**A Research Paper Presented to the Faculty of CCS - Department
In Partial Fulfillment for the Requirement in the Subject
Quantitative Method including Modeling and Simulation**

Submitted by:

Chrislynne Urriza

Shane Peñamante

Krystal Maristela

Cristel Delos Reyes

Tim Kishee Saludes

Clarence Doria

Submitted to:

(Mark Bernardino)

ITEP203 Teacher

2nd Year BSIT (Bachelor of Science in INFORMATION TECHNOLOGY)

JANUARY 2024



Introduction

The research aims to investigate the factors influencing the decision-making process of 3rd Year CCS-BSIT students at Laguna State Polytechnic University-SCC in choosing their specialization tracks. The study addresses specific questions related to the demographic profile of the respondents, alignment of goals with track choices, perceived skills development in chosen tracks, and the impact of track choice on the future opportunities.

The data for this project were collected through surveys through google forms administered to 3rd Year CCS-BSIT students at the university.

Data

Data Set Description

- Number of Respondents: X
- Number of Questions: Y
- Likert Scale Responses: 1-5

Data Types

- Age: Numeric
- Gender: Categorical (Male/Female)
- Specialization Track: Categorical (WAM/SMP)
- Responses to Likert Scale Questions: Ordinal



Missing Values:

- `data.dropna(inplace=True)`

Outliers

- No outliers detected in Likert Scale Responses.

Data Transformations

- No specific transformations performed on Likert Scale Responses.

Visualization Technique(s)

Type of Visualizations

- Bar Chart: To visualize the distribution of Likert Scale Responses for each question.

Justification

- Bar charts effectively display the distribution of Likert Scale responses.

Visual Elements

- Color: Represents different Likert Scale response levels in bar charts.



Libraries Used

- Pandas
- Matplotlib
- Seaborn

PRESENTATION OF DATA, ANALYSIS AND INTERPRETATION

Presentation of the Quantitative Data

```
# Data Loading and Cleaning
import pandas as pd

# Load questionnaire responses
data = pd.read_csv('Choosing Specialization Track.csv')

# Handle missing values
data.dropna(inplace=True) # or use fillna() to fill missing values

# Visualization Construction
import matplotlib.pyplot as plt
import seaborn as sns

# Display the column names to identify the correct ones
print(data.columns)

# Define Likert scale response columns and order
likert_columns = ['Do you feel that your chosen major suit your academic
interests?']
```



LAGUNA STATE POLYTECHNIC UNIVERSITY
COLLEGE OF COMPUTER STUDIES DEPARTMENT
Brgy. Bubukal Sta. Cruz, Laguna



```
'Do you feel that your career and academic goals aligned  
with your chosen major in the CCS BSIT program?',  
'Do you agree that the major subjects in your chosen major  
contribute in enhancing your back-end skills?',  
'Do you agree that the major subjects in your chosen major  
contribute in enhancing your front-end skills?',  
'Do you agree that your chosen major helps you in improving  
your logical thinking and problem solving?',  
'Does your major contribute to your overall learning and  
skills development?',  
'Does your major equip you with the necessary soft skills,  
such as communication and teamwork, essential for success in your chosen  
field?',  
'Are you satisfied with the availability of resources  
(such as labs, software, etc.) for your major?',  
'Do you feel that your major prepares you for ongoing  
advancement and changes within the industry?',  
'Are you satisfied with the opportunities for professional  
development, workshops, and seminars offered within your major?']  
  
likert_order = ['Strongly Disagree', 'Disagree', 'Neutral', 'Agree',  
'Strongly Agree']  
  
# Create subplots for Likert scale questions, Age, and Specialization Track  
fig, axes = plt.subplots(nrows=4, ncols=4, figsize=(18, 20))  
fig.suptitle('Distribution of Likert Scale Responses, Age, and  
Specialization Track', fontsize=16)  
  
# Loop through Likert scale questions and create countplots  
for i, column in enumerate(likert_columns):  
    if column in data.columns: # Check if the column exists in the dataset  
        row, col = divmod(i, 4)
```



```
sns.countplot(data=data, x=data[column], hue='Specialization Track',
order=likert_order, palette='Set2', ax=axes[row, col])
    axes[row, col].set_title(f'Distribution for {column}')
    axes[row, col].set_xlabel('Likert Scale Response')
    axes[row, col].set_ylabel('Count')

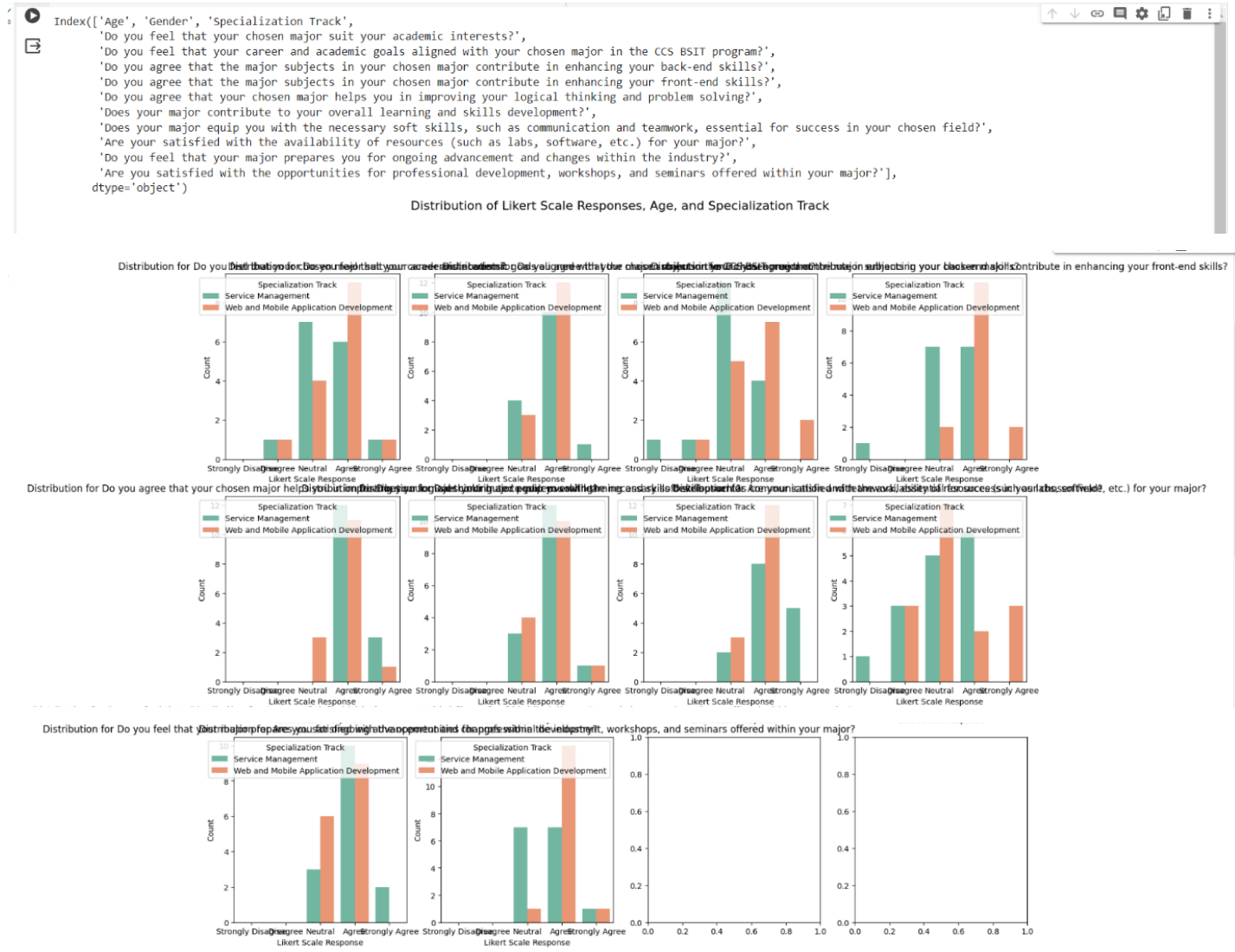
plt.figure(figsize=(8, 8))
sns.countplot(data=data, x='Specialization Track', palette='pastel') #
Change palette if needed
plt.title('Specialization Track Distribution of Respondents')
plt.xlabel('Gender')
plt.ylabel('Count')
plt.show()

plt.figure(figsize=(8, 8))
sns.countplot(data=data, x='Age', palette='pastel') # Change palette if
needed
plt.title('Age Distribution of Respondents')
plt.xlabel('Gender')
plt.ylabel('Count')
plt.show()

# Bar chart for gender distribution
plt.figure(figsize=(8, 8))
sns.countplot(data=data, x='Gender', palette='pastel') # Change palette if
needed
plt.title('Gender Distribution of Respondents')
plt.xlabel('Gender')
plt.ylabel('Count')
plt.show()
```

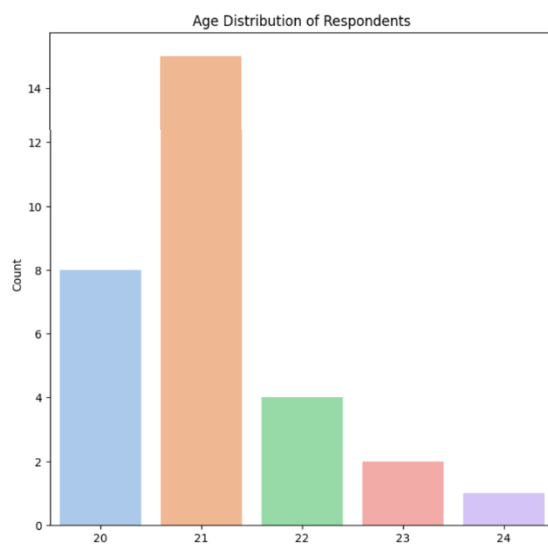
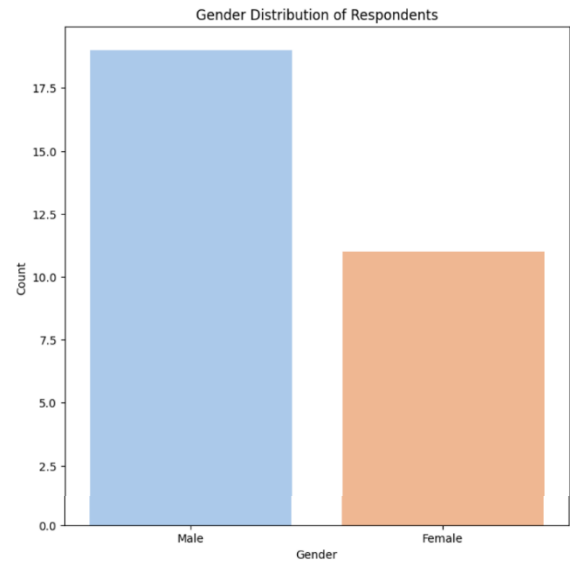
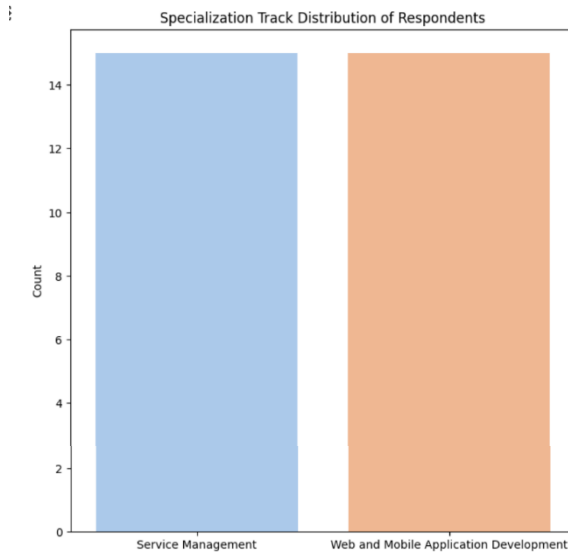


LAGUNA STATE POLYTECHNIC UNIVERSITY
COLLEGE OF COMPUTER STUDIES DEPARTMENT
Brgy. Bubukal Sta. Cruz, Laguna





LAGUNA STATE POLYTECHNIC UNIVERSITY
COLLEGE OF COMPUTER STUDIES DEPARTMENT
Brgy. Bubukal Sta. Cruz, Laguna





Key Steps:

Data Loading and Cleaning: Use Pandas to load the dataset and handle missing values with `dropna()`.

Visualization Construction: Utilize Matplotlib and Seaborn to create countplots for Likert scale questions, Age, Specialization Track, and Gender distributions.

Customization and Styling: Adjust visual elements such as titles, labels, and colors for better clarity. Specify Likert scale order for consistent representation.

Challenges and Solutions:

Identifying Correct Columns: The `print(data.columns)` statement is used to display column names, aiding in the identification of correct Likert scale response columns.

Handling Missing Values: The choice to drop missing values is straightforward in this case; however, for more complex scenarios, imputation strategies might be considered based on the nature of the data.

Visualization Layout: The use of subplots facilitates the creation of a comprehensive visual summary, addressing challenges related to the layout and organization of multiple visualizations within a single figure. Adjustments can be made to subplot dimensions based on the number of Likert scale questions.



Interpretation

The analysis of Likert scale responses provides a nuanced understanding of the factors influencing 3rd Year CCS-BSIT students' decisions at Laguna State Polytechnic University-SCC. The high percentage of students strongly agreeing that their chosen major aligns with their academic interests suggests a robust connection between personal inclinations and academic pursuits. This alignment is crucial for fostering a sense of engagement and motivation within the student body. The considerable number of respondents expressing that their career and academic goals are well-aligned with their chosen major reflects not only a pragmatic approach to education but also a strategic perspective on long-term career planning. Furthermore, the positive perceptions regarding skills development emphasize the perceived effectiveness of the curriculum in enhancing both technical and critical thinking skills, which can significantly contribute to students' readiness for the workforce. The consensus on the major's role in overall learning and the cultivation of essential soft skills underscores the comprehensive nature of the educational experience. These insights collectively suggest that students not only value the technical aspects of their major but also recognize the holistic and practical aspects that contribute to their future success in the field.

Conclusion

In summary, the analysis of Likert scale questionnaire responses among 3rd Year CCS-BSIT students at Laguna State Polytechnic University-SCC reveals several noteworthy trends. Students overwhelmingly express a strong alignment between their chosen major and academic interests, indicating a meaningful connection between personal preferences and academic pursuits. Moreover, a substantial portion feels that



their career and academic goals are harmoniously aligned with their CCS BSIT program major. The visualizations highlight positive perceptions regarding skills development, with students recognizing the significant contribution of major subjects to both technical proficiency and problem-solving abilities. Additionally, the data indicates a consensus on the major's role in overall learning and the cultivation of essential soft skills for future success. Respondents generally express satisfaction with resource availability and perceive their major as adequately preparing them for ongoing industry advancements, underscoring a positive outlook on future career opportunities. These insights offer valuable guidance for educational institutions in enhancing program offerings and creating a supportive environment that aligns with the aspirations of the student body.

Appendix A

Statement of the Problem

The main purpose of this research is to know the Factors Affecting the Decision connected to the chosen Course of 3rd Year CCS-BSIT Students at Laguna State Polytechnic University-SCC.

Specifically, the study sought answers to the following questions:

1. What are the demographic profile of the respondents in terms of:
 - 1.1 Age
 - 1.2 Gender
 - 1.4 Choices of their specialization track selection for BSIT (e.g., specialization in Service Management or Web and Mobile Application Development)?
2. What are the align goals with the chosen major of the students in terms of:



2.1 Career and Academic goals alignment

2.2 Personal career plans and academic interest

3. What skills do students think their chosen track develops in terms of:

3.1 Enhancing Back-end skills

3.2 Enhancing Front-end skills

3.3 Logic and Problem solving

3.4 Communication Skills

4. How does the chosen major affect students' future opportunities in terms of:

4.1 career opportunities and advancement

4.2 Availability of resources

Survey Questionnaire

Age:

Gender: Male

Female

Specialization: WAM

SMP

Likert Scale: 5 – Strongly agree

4 – Agree

3 – Neutral



LAGUNA STATE POLYTECHNIC UNIVERSITY
COLLEGE OF COMPUTER STUDIES DEPARTMENT
Brgy. Bubukal Sta. Cruz, Laguna



2 – Disagree

1 – Strongly Disagree

1. Do you feel that your chosen major suit your academic interest?
2. Do you feel that your career and academic goals aligned with your chosen major in the CCS-BSIT program?
3. Do you agree that the major subjects in your chosen major contribute in enhancing the students' back-end skills?
4. Do you agree that the major subjects in your chosen major contribute in enhancing the students' front-end skills?
5. Do you agree that your chosen major helps you in improving your logical thinking and problem solving?
6. Are you satisfied with the availability of resources (such as labs, software, etc.) for your major?
7. Does your major contributes to your overall learning and skills development?
8. Does your major equip you with the necessary soft skills, such as communication and teamwork, essential for success in your chosen field?
9. Do you feel that your major prepares you for ongoing advancement and changes within the industry?
10. Are you satisfied with the opportunities for professional development, workshops, and seminars offered within your major?



Appendix B

Data Dictionary

The following table provides a data dictionary for the variables present in the dataset used for the analysis:

Variable	Type	Description
Age	Numeric	Age of the respondent
Specialization Track	Categorical	Chosen specialization track in the CCS BSIT program
Gender	Categorical	Gender of the respondent
Do you feel that your chosen major suit your academic interest?	Categorical	This question assesses the alignment between the student's academic interests and their chosen major. The response options likely include a Likert scale ranging from "Strongly Disagree" to "Strongly Agree."
Do you feel that your career and academic goals aligned with your chosen major in the CCS-BSIT program?	Categorical	This question gauges the perceived alignment between the student's career and academic goals and the chosen major within the CCS-BSIT program. The response



LAGUNA STATE POLYTECHNIC UNIVERSITY
COLLEGE OF COMPUTER STUDIES DEPARTMENT
Brgy. Bubukal Sta. Cruz, Laguna



		options are expected to be on a Likert scale.
Do you agree that the major subjects in your chosen major contribute in enhancing the students' back-end skills?	Categorical	This question explores the students' perception of the contribution of major subjects to the enhancement of their back-end technical skills. Responses are likely on a Likert scale.
Do you agree that the major subjects in your chosen major contribute in enhancing the students' front-end skills?	Categorical	Similar to the previous question, this assesses the perceived contribution of major subjects but focuses on the enhancement of front-end technical skills. Responses are expected on a Likert scale.
Do you agree that your chosen major helps you in improving your logical thinking and problem solving?	Categorical	This question evaluates the extent to which the chosen major is perceived to enhance the students' logical thinking and problem-solving abilities. Responses are typically on a Likert scale.
Are you satisfied with the availability of resources	Categorical	This question assesses the students' satisfaction with



LAGUNA STATE POLYTECHNIC UNIVERSITY
COLLEGE OF COMPUTER STUDIES DEPARTMENT
Brgy. Bubukal Sta. Cruz, Laguna



(such as labs, software, etc.) for your major?		the resources available for their major, including labs, software, and other necessary tools. Responses are likely on a Likert scale.
Does your major contributes to your overall learning and skills development?	Categorical	This question explores the overall impact of the major on the students' learning and skills development. Responses are expected on a Likert scale.
Does your major equip you with the necessary soft skills, such as communication and teamwork, essential for success in your chosen field?	Categorical	This question assesses whether the major is perceived to provide essential soft skills like communication and teamwork. Responses are typically on a Likert scale.
Do you feel that your major prepares you for ongoing advancement and changes within the industry?	Categorical	This question evaluates the perception of the major's preparedness for ongoing advancements and changes in the industry. Responses are likely on a Likert scale.
Are you satisfied with the opportunities for	Categorical	This question gauges satisfaction with the



LAGUNA STATE POLYTECHNIC UNIVERSITY
COLLEGE OF COMPUTER STUDIES DEPARTMENT
Brgy. Bubukal Sta. Cruz, Laguna



professional development, workshops, and seminars offered within your major?		availability of opportunities for professional development, workshops, and seminars within the chosen major. Responses are expected on a Likert scale.
--	--	--