CB3021 Business Discovery Methods

Group 1
[redacted]
Chow Sai Yat Morris 54796760
[redacted]
[redacted]5
Olivia T. Zandstra 54757388

Discovering IS, EF and MS students' opinion and choice behavior in major allocation after year 1 study

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Introduction

Our research all started because the double major system is being slowly introduced at CityU.

YOU MAY BE THINKING

THIS HAS TO DO WITH RESEARCH BECAUSE…..

- We need to make sure this introduction is *successful*
- To do that **we need to understand**;
- - What **behaviour students use** and how they choose their majors
- - What their **opinions** are **on** the **existing** major allocation **system**

HOW CAN WE FIND OUT THIS INFORMATION?

- With research!

Starting Out

We created 3 Management Problems:

1) Should CityU should **re-construct** the major allocation system?

2) Should departments provide **more information** for students when choosing their major?

3) Are there any **significant differences** among choice behaviors and opinions on the major allocation system within the three different departments?

And 3 Research Questions:

1) What are students current satisfaction levels with regards to the screening criteria of the current major allocation system?

2) Does the information provided by the department ease the process of choosing a major?

3) What are the differences of opinions and choice behaviours in major allocation amongst each respective department?

Methodology

Unstructured Interviews

- Aims: To form a preliminary understanding of CityU students' opinions towards the current major allocation systems.
- Sample criteria: CityU EF, IS, MS students
- Sample size: 5

Structured Interviews

- Aims: To explore students' preferences and behaviours when choosing their major
- Sample criteria: CityU EF, IS, MS students
- Sample size: 10

Methodology

Questionnaires

- Aims: Deeply investigate significant topics based on our interview findings
- Screening: BBAU4 CityU EF, IS, MS students
- Sample Size: 186
- Sampling method: Snowball + Convienences
- Tools: Google forms

Qualitative Insights

What did we learn from our interviews & survey?

Important Findings

Method of Choice

- Deduction Method
- Department Environment
- Presence of a specific target industry after graduation

GPA

- Nobody cared

Program Scope

- For students unsure of what they want to do career wise program scope was very important (they preferred a program with a broader scope)
- Vice Versa
-

Important Findings Pt. 2

Research Channels

- Senior Students
- Mentoring Schemes
- Course Leaders/ Department Staff

Decision Period

- 1 Year is more than enough
- Year 1 is a waste of time
- Decision at the beginning of the semester is prefferable

Ratio of GE to Department Courses

- GE courses don't help in the decision process
- Introductory courses aren't good indicators of what you'll study later
- **FREEDOM DESIRED!**

Quantitative Insights

What did learn from our data?

Major Analysis

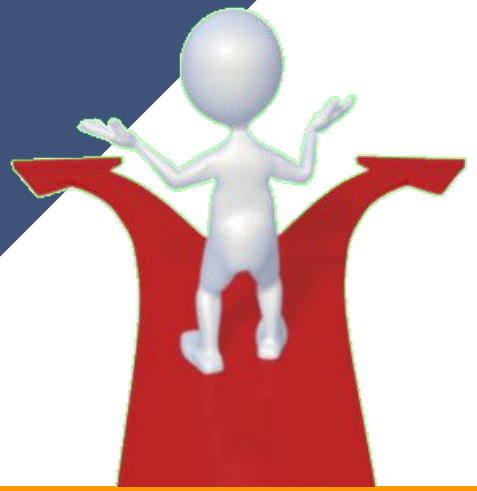
Discovering IS, EF and MS students' **choice behavior in major allocation** after year 1 study

1. **Analysis on Choice Behaviors**

Discovering IS, EF and MS students' **opinion in major allocation** after year 1 study

2. **Analysis on Students' Opinion on First Year of Study**
3. **Analysis on Student's Opinion on the Ease of Information for Choosing a Major**
4. **Analysis of Student's Opinion on Their Choice Behaviour**

1. Analysis of Choice Behaviors



Hypothesis 1

Null Hypothesis

There is no significant difference when choosing a major with a broader set of skills between students who have and do not have a specific target major choice.

Q1.Did you have a specific target for your major choice before choosing your major?

Yes No

Q2. To what extent would you choose a major because it provides a multidisciplinary range of content compared to other specialized majors?

Multidisciplinary: combining or involving several academic topics that provides you with general knowledge of different professional specifications.

(1 represents very unlikely, 5 represents very likely)

1 2 3 4 5

Hypothesis 1 - Analysis Result

Let μ 1 be the population mean of the students who have a clear preference when choosing a major that provides a broader set of skills.

Let μ 2 be the population mean of the students who do not have a clear preference when choosing a major which provides a broader set of skills.

(Independent-Samples T Test)
H 0: μ 1 = μ2
H 1: μ 1 ≠ μ2

Group Statistics

	1. Did you have a specific target for your major choice before applying for your major?	N	Mean	Std. Deviation	Std. Error Mean
2. To what extent would you choose a major because it provides a multidisciplinary range of content compared to other specialized majors?	Yes	109	2.73	1.281	.123
	No	68	3.66	1.410	.171

Hence, we reject the hypothesis

Independent Samples Test

		Levene's Test for Equality of Variances		t-test for Equality of Means						
									95% Confidence Interval of the Difference	
		F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	Lower	Upper
2. To what extent would you choose a major because it provides a multidisciplinary range of content compared to other specialized majors?	Equal variances assumed	.339	.561	-4.507	175	.000	-.928	.206	-1.334	-.522
	Equal variances not assumed			-4.408	132.056	.000	-.928	.210	-1.344	-.511

Key Findings & Insights

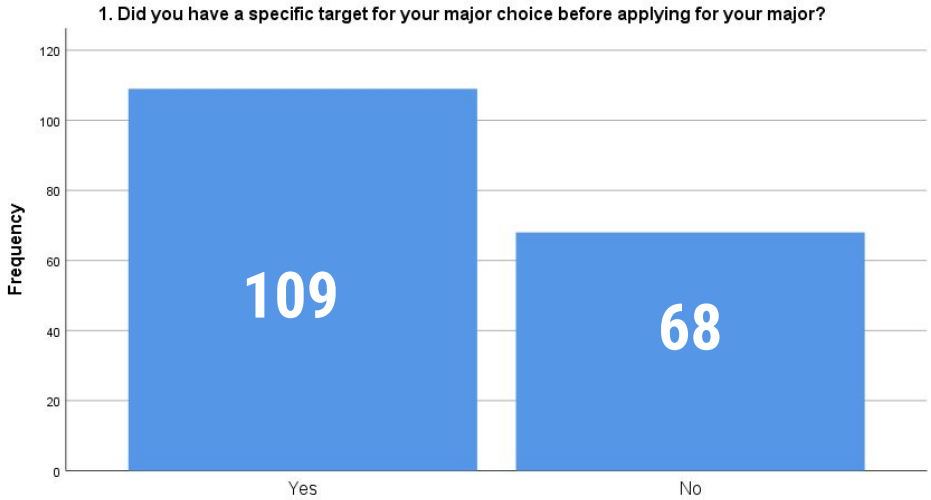
Students without a specific major preference:

- Show significant preference towards a major that provides a broader set of skills
-

Reasons Behind This:

- not certain about what they want
- hope to obtain knowledge of more skills
- explore personal interests

Key Findings & Insights



Which BBA department do you belong to? * 1. Did you have a specific target for your major choice before applying for your major? Crosstabulation

Count

		1. Did you have a specific target for your major choice before applying for your major?		
		Yes	No	Total
Which BBA department do you belong to?	EF	39	20	59
	MS	35	23	58
	IS	35	25	60
Total		109	68	177

More than 60% of respondents have a specific major target

We want to further investigate whether EF, IS and MS students wish to enter a major in Semester A of Year 1 in our third hypothesis

Hypothesis 2 - EF, MS & IS students' choice of major and factors of their decision are independent

Cross Tabulation, Chi-Square Test & Standardized Residual

Choice Factors

- Career Prospects
- Personal Interests
- Career Prospects & Personal Interests of equal Importance

Which BBA department do you belong to? * 3. When choosing a major which of the following factors was/is more important to you? Cross tabulation

			3. When choosing a major which of the following factors was/is more important to you?			Total
			Career Path is more important than personal interests	Personal interests are more important than a career path	Career path and personal interests are of equal importance	
Which BBA department do you belong to?	EF	Count	21	26	12	59
		Standardized Residual	.3	-.1	-.3	
	MS	Count	13	24	21	58
		Standardized Residual	-1.4	-.4	2.3	
	IS	Count	25	29	6	60
		Standardized Residual	1.1	.4	-2.0	
Total		Count	59	79	39	177

Cross Tabulation, Chi-Square Test & Standardized Residual

Hypothesis to test

H0: EF, MS & IS choice of major and their factors of choice are independent.

H1: EF, MS & IS choice of major and their factors of choice are not independent.

Conclusion

Alpha = 0.05

P value obtained = 0.011

Alpha > P-value obtained - Reject H0

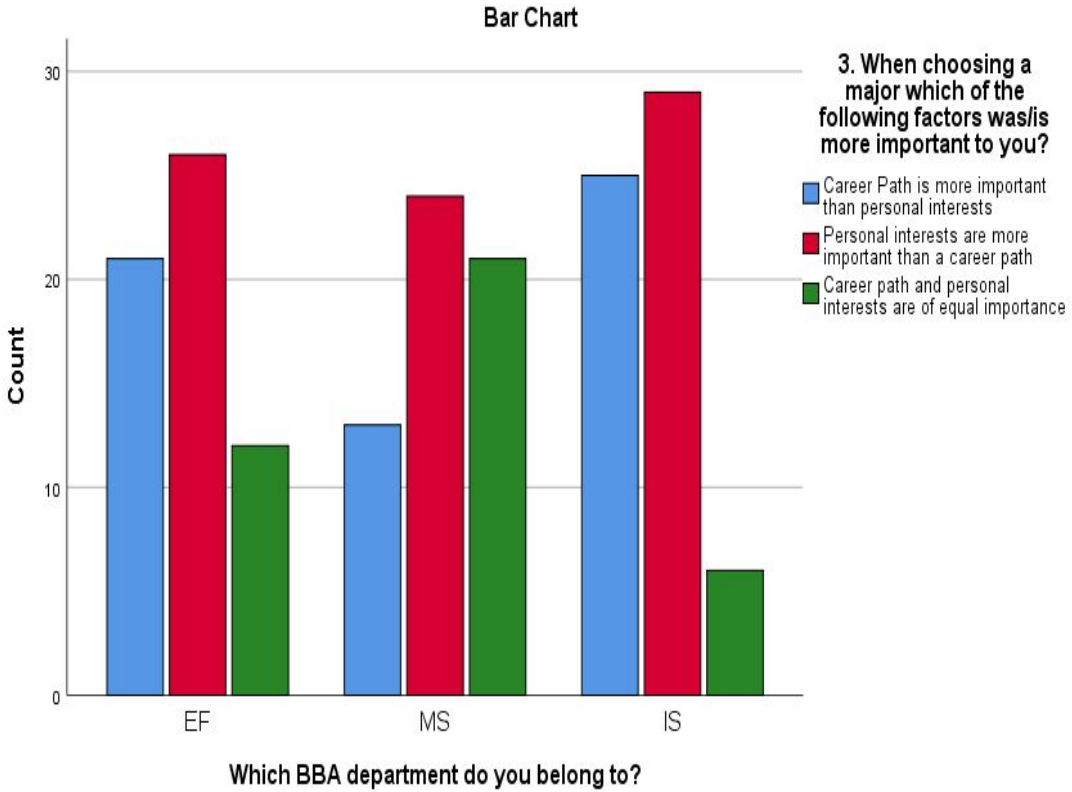
"Potential association in MS & IS between the factors of Career Prospects and Personal interests being of equal importance when choosing their major."

Chi-Square Tests

	Value	df	Asymptotic Significance (2-sided)
Pearson Chi-Square	13.049[a]	4	.011
Likelihood Ratio	13.377	4	.010
Linear-by-Linear Association	1.510	1	.219
N of Valid Cases	177		

a. 0 cells (0.0%) have expected count less than 5. The minimum expected count is 12.78.

Key Findings & Insights



Count	1	2	3	Total
MS	13	24	21	58
EF	21	26	12	59
IS	25	29	6	60
Total	59	79	39	177

2. Analysis on Students' Opinion on First Year of Study

Hypothesis 3

Null Hypothesis

EF, IS and MS students have the same opinions on going into their major in Semester A of Year 1.

Demographic_Q2. Which BBA department are you in?

EF / IS / MS / Others (End of Survey)

Q5. Going into a major in Semester A of Year 1 allows me more adequate time to explore a major that will suit me best

(1 represents strongly disagree, 5 represents strongly agree)

1 2 3 4 5

Hypothesis 3 - Analysis Result

Descriptives

5. Going into a major at the Semester A of Year 1 allows me more adequate time to explore a major that will suit me best

	N	Mean	Std. Deviation	Std. Error	95% Confidence Interval for Mean		Minimum	Maximum
					Lower Bound	Upper Bound		
EF	59	3.07	1.337	.174	2.72	3.42	1	5
MS	58	3.64	.810	.106	3.42	3.85	2	5
IS	60	2.28	1.043	.135	2.01	2.55	1	5
Total	177	2.99	1.215	.091	2.81	3.17	1	5

ANOVA

5. Going into a major at the Semester A of Year 1 allows me more adequate time to explore

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	54.669	2	27.334	23.166	.000
Within Groups	205.309	174	1.180		
Total	259.977	176			

Let μ1 be the population mean of EF students who agree that going into a major in Semester A of Year 1

Let μ2 be the population mean of MS students who agree that going into a major in Semester A of Year 1

Let μ3 be the population mean of IS students who agree that going into a major in Semester A of Year 1

(AnovaTest)

H 0: μ1 = μ2 = μ3

H 1: Not all the same

Hence, we reject the hypothesis

Key Findings & Insights

- Students from different departments **do not have the same opinion** when choosing their major in Year 1 Semester A.

- **MS - Highest mean**

  Reasons behind:

  - Acquire programming and statistical skills earlier
  - Obtain certificates prior to others (Basic SAS/Advanced SAS/ EM Certificate)
  - Easier to get internship positions

BBA Business Analysis 4-yr Structure in 2018/19 intake (Cohort 2018 and thereafter)
Effective from Catalogue Term: Sem A 2019/2020

Yr/Sem							Offer Year
1A	Sem A or B CB2100 Introduction to Financial Accounting	Sem A or B CB2601 Marketing	CB2201 Operations Management	Sem A or B CB2400 Micro-Economics	GE1401 University English or EAP (Note 1)	Sem A or B CHIN1001 University Chinese I (Note 3)	2018
1B	Sem A or B CB2300 Management	Sem A or B CB2500 Information Management	CB2200 Business Statistics	GE (Note 2)	GE2402 English for Business Communication or EAP (Note 1)		
2A*	CB2101 Introduction to Managerial Accounting	CB2402 Macro-Economics	MS3252 Regression Analysis	MS3251 Analysis using SAS	GE (Note 2)	GE2402 English for Business Communication (for students taken EAP)	2019
2B*	College Elective	Sem A or B CB3410 Financial Management	MS4212 Predictive Analytics and Forecasting	College Elective Area 5	Minor 1 (Note 4)	GE1401 University English (for students taken EAP)	
3A	College Elective	College Elective Area 5	MS4224 Enterprise Data Mining	GE1501 Chinese Civilization – History & Philosophy	Minor 2 (Note 4)		2020
3B	College Elective	GE (Note 2)	MS3111 Quantitative Business Analysis with VBA	GE (Note 2)	Minor 3 (Note 4)		
4A	College Elective	Major Elective 1	Major Elective 2	Major Elective 3	Minor 4 (Note 4)		2021
4B	CB4303 Strategy and Policy	MS4226 Risk Management Models	MS4252 Big Data Analytics	Free Elective	Minor 5 (Note 4)		

Major Electives: Students are required to take **3** electives from Groups A and B and at least **1** must be from Group A in the following list:

Group A :	*Group B :*
CB2011 Solving Business Problems with Spreadsheet Modeling	CS2360 Java Programming
MS3224 Business Survey Design	CS2468 Data Structures and Data Management
MS3403 Internship for Business Analysis and Operations Management	IS2240 Python Programming for Business *
MS4251 Quantiative Analysis for Marketing	MS3106 Simulation
MS4253 Business Analysis Project	MS3125 Business Project Management
MS4254 Quantitative Analysis for Economics and Finance	MS3322 Quality Management
MS4262 Advanced Analytics Using SAS	MS4227 Pricing and Revenue Management
	Any one Core & Elective course from other BBA Majors without Major Leader's Approval

* Subject to approval

Key Findings & Insights

To further investigate why EF, IS and MS students have different opinions on going into their majors in Semester A of Year 1

We asked the following questions to see whether…

- **GE courses in Year 1 help EF, IS and MS students in choosing their major**
- **Introduction courses related to majors in Year 1 help EF, IS and MS students for choosing their major**

To what extent do you agree with the following statement?

Q4a. “GE courses in Year 1 help me with choosing my major”

(1 represents strongly agree, 5 represents strongly disagree)

1 2 3 4 5

Q4b. “Introduction courses related to majors in Year 1 help me to choose my major”

Introductory courses are: (CB2100) Introduction to Financial Accounting, (CB2601) Marketing, (CB2201) Operations Management, (CB2400) Micro-Economics, (CB2300) Management, (CB2500) Information Management

(1 represents strongly disagree, 5 represents strongly agree)

1 2 3 4 5

Key Findings & Insights

Descriptives

		N	Mean	Std. Deviation	Std. Error	95% Confidence Interval for Mean		Minimum	Maximum
						Lower Bound	Upper Bound		
4a) GE courses in year 1 help me choose my major	EF	59	2.22	1.175	.153	1.91	2.53	1	5
	MS	58	2.28	.951	.125	2.03	2.53	1	5
	IS	60	2.62	1.277	.165	2.29	2.95	1	5
	Total	177	2.37	1.152	.087	2.20	2.54	1	5
4b)Introductory courses related to majors in year 1 help me to choose my major	EF	59	2.27	1.385	.180	2.98	3.70	1	5
	MS	58	2.26	1.064	.140	3.22	3.78	1	5
	IS	60	3.57	1.184	.153	3.26	3.87	1	5
	Total	177	2.70	1.216	.091	3.29	3.65	1	5

Reasons Behind:

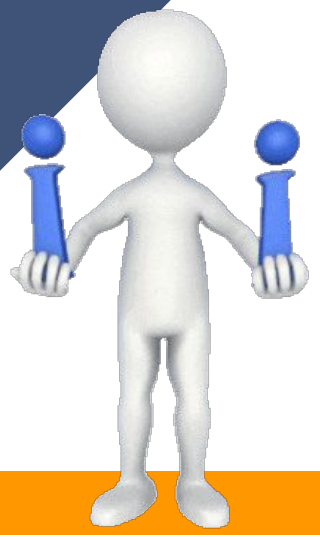
Most of the major courses in these two departments are more related to:

- specialized programming knowledge (e.g. SAS/ R / Bloomberg)
- specialized statistics knowledge (e.g. Regression and Forecasting Model)
- specialized financial knowledge (e.g. DCF Model and Derivatives)

EF, MS students

- **generally disagree** both GE courses and Introduction courses in Year 1 help them to choose their major
- **may wish to have more time** to build up their major knowledge

3. Analysis on Student's Opinion on the Ease of Information when Choosing a Major



Hypothesis 4

Students agree that they received enough information from their departments when choosing their major.

Q6. Did your department provide any information that helped you choose your major?

Yes No (Please skip Q7 - Q8, Go to Q9)

Q7. Which information tool from your department best assisted you in your decision of major?

A. Briefing sessions
B. Course leaders/ Mentors
C. Department Websites

Q8. To what extent do you agree that you have received enough information from departments for choosing your major?

(1 represents strongly disagree, 5 represents strongly agree)

1 2 3 4 5

Hypothesis 4 - Analysis Result

Let μ 1 be the population mean of students that agree that they have received enough information from their departments to choose their major.

(One-sample T Test)

H 0: μ 1 >= 4

H 1: μ 1 < 4

One-Sample Statistics

	N	Mean	Std. Deviation	Std. Error Mean
8. To what extent do you think you have received enough information from departments with regards to choosing your major?	146	2.88	1.069	.088

One-Sample Test

	Test Value = 4					
	t	df	Sig. (2-tailed)	Mean Difference	95% Confidence Interval of the Difference Lower	Upper
8. To what extent do you think you have received enough information from departments with regards to choosing your major?	-12.694	145	.000	-1.123	-1.30	-.95

Hence, we reject the hypothesis

Key Findings & Insights

Which BBA department do you belong to? * 7. Which information tool from your department best assisted you in your decision of major? Crosstabulation

Count

		7. Which information tool from your department best assisted you in your decision of major?			
		Briefing sessions	Course leaders/ Mentors	Department Websites	Total
Which BBA department do you belong to?	EF	9	29	5	43
	MS	12	16	19	47
	IS	10	23	23	56
Total		31	68	47	146

From here we would also like to further investigate whether senior students' advice or department advice is more useful in the major decision process.

Interesting Findings:

- Three of the departments have the highest frequency for Course leaders/ Mentors
- Only a few EF students consider department websites useful in assisting them with their major choice decision

Key Findings & Insights

We asked the following questions to see whether…

- **Senior students' advice is more useful for major decision**

  or

- **Department advice is more useful for major decision**

Q9. Did you ask for advice from senior students when choosing your major?

Yes No (Please skip Q10 - Q13, Go to Q14)

Q10. If yes, to what extent do you agree that advice from senior students is useful for your major choice?

(1 represents "strongly disagree" and 5 represents "strongly agree")

1 2 3 4 5

Q11. Did you consult your department when making your major decision?

Yes No (Please skip Q12 - Q13, Go to Q14)

Q12. If yes, to what extent do you agree the advice from your department is useful for your major choice?

(1 represents "strongly disagree" and 5 represents "strongly agree")

1 2 3 4 5

Q13. Which of the following choices can help you to make a better decision for your major?

A. Advice from senior students
B. Advice from department professors
C. No difference between two parties

Key Findings & Insights

	Mean	N	Std. Deviation	Std. Error Mean
10. To what extent do you agree that advice from senior students is useful for your major choice?	3.39	135	1.198	.103
12. To what extent do you agree the advice from departments is useful for your major choice?	3.74	135	1.058	.091

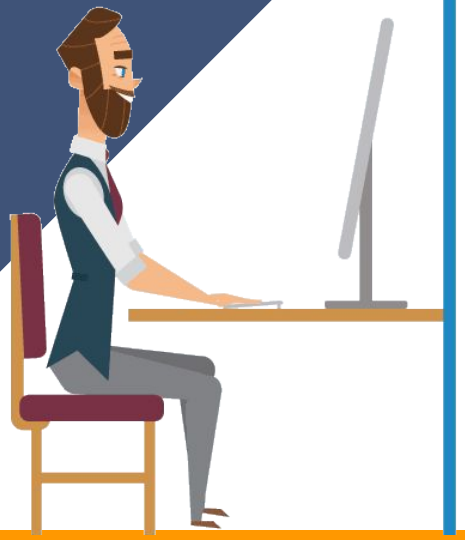
Interesting Findings:

- Although EF, IS and MS students disagree in that they receive enough information from their department when choosing their major, *they still consider advice from the department more useful than advice from senior students*

Recommendations:

- Students can be better assisted by the department if they have more opportunities to speak with course leaders/mentors before choosing their major.
- E.g. MS department has provided a mentoring scheme for BANL students to increase understanding of their major options and career paths

4. Analysis of Student's Opinions on Their Choice Behaviour



Hypothesis 5

Null Hypothesis

Satisfaction of the current GPA based entrance shows no significant difference between students who regret their major choice and students who do not regret their major choice.

Q14. Do you regret your choice in major? (Skip this question if you are year 1)

Yes No

Q17. Overall, I am satisfied with the current GPA allocation system

(1 represents strongly dissatisfied, 5 represents strongly satisfied)

1 2 3 4 5

Hypothesis 5 - Analysis Result

By using Independent samples t-test,

- to compare the average satisfaction toward GPA between two samples
-

Levene's Test:

Significant value < 0.05 ⟶ Rejected

- Equal varianes not assumed

Group Statistics

	14. Do you regret your choice in major? (If you are Year 1 student, please skip to the end of the survey)	N	Mean	Std. Deviation	Std. Error Mean
17. Overall, I am satisfied with the current GPA allocation system	Yes	72	2.29	1.013	.119
	No	101	3.25	1.195	.119

Independent Samples Test

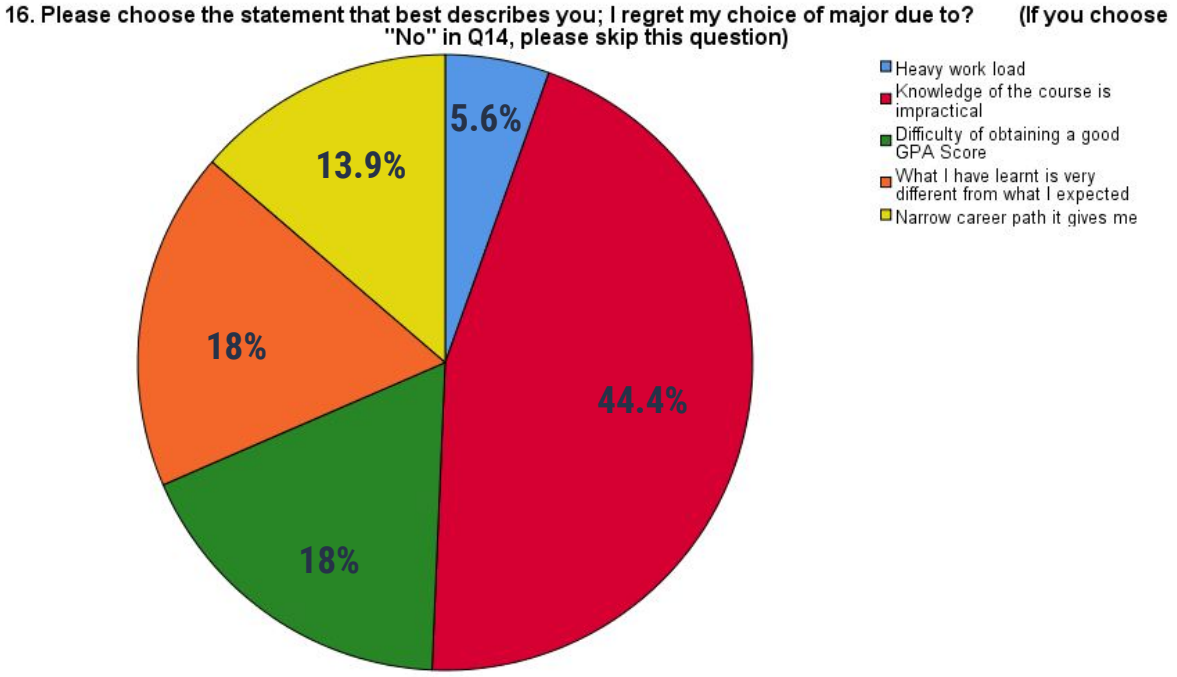
		Levene's Test for Equality of Variances		t-test for Equality of Means						
									95% Confidence Interval of the Difference	
		F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	Lower	Upper
17. Overall, I am satisfied with the current GPA allocation system	Equal variances assumed	5.322	.022	-5.518	171	.000	-.956	.173	-1.298	-.614
	Equal variances not assumed			-5.672	165.850	.000	-.956	.169	-1.289	-.623

Hence, we reject the hypothesis

Key Findings & Insights

From **72 respondents who regret** their major choice

We find out that most of the students think **the knowledge of the courses are impractical.**



Group Statistics

	14. Do you regret your choice in major? (If you are Year 1 student, please skip to the end of the survey)	N	Mean	Std. Deviation	Std. Error Mean
15a) I will try my best to finish my assignments	Yes	72	3.83	.979	.115
	No	101	4.22	.769	.077
15b) I will actively engage in the lectures	Yes	72	2.54	1.210	.143
	No	101	3.72	.999	.099
15c) I will actively engage in the tutorials	Yes	72	2.64	1.166	.137
	No	101	3.86	1.010	.101
15d) I will try my best to finish my group projects	Yes	72	3.71	.971	.114
	No	101	4.23	.786	.078
15e) I will try my best to prepare for my exams	Yes	72	3.96	1.013	.119
	No	101	4.35	.805	.080

Independent Samples Test

		Levene's Test for Equality of Variances		t-test for Equality of Means						
									95% Confidence Interval of the Difference	
		F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	Lower	Upper
15a) I will try my best to finish my assignments	Equal variances assumed	6.307	.013	-2.890	171	.004	-.384	.133	-.647	-.122
	Equal variances not assumed			-2.777	129.510	.006	-.384	.138	-.658	-.111
15b) I will actively engage in the lectures	Equal variances assumed	6.293	.013	-7.076	171	.000	-1.191	.168	-1.523	-.859
	Equal variances not assumed			-6.854	134.286	.000	-1.191	.174	-1.535	-.847
15c) I will actively engage in the tutorials	Equal variances assumed	5.300	.023	-7.353	171	.000	-1.222	.166	-1.551	-.894
	Equal variances not assumed			-7.178	139.007	.000	-1.222	.170	-1.559	-.886
15d) I will try my best to finish my group projects	Equal variances assumed	3.112	.079	-3.883	171	.000	-.519	.134	-.783	-.255
	Equal variances not assumed			-3.749	132.357	.000	-.519	.139	-.793	-.245
15e) I will try my best to prepare for my exams	Equal variances assumed	.010	.922	-2.804	171	.006	-.388	.138	-.661	-.115
	Equal variances not assumed			-2.700	130.572	.008	-.388	.144	-.673	-.104

Hypothesis:
Students who regret their major choice put more effort than those do not regret their choice.

All testings are rejected

Interesting Findings:
Relatively low score in both

- tutorial engagement
- lectures engagement

Recommendations & Conclusion

Improve course flexibility in Year 1 for students.

Allow students to declare their major during Year 1 study.

Increase Information Flow from departments and senior students.

Objectives

1) Improve student's university experience and productivity during their university study.
2) Provide feedback for how to best implement a double major system.

Q & A