

Perception and Level of Interest of Civil Engineering Students Towards the ENT600: Technology Entrepreneurship Course

Nor Azmi Bakhary¹, Musmuliadi Kamaruding^{1*}, Nur Kamaliah Mustaffa¹,
Norizzati Ibrahim²

¹ School of Civil Engineering, College of Engineering, Universiti Teknologi MARA, 40450, Shah Alam, Selangor, Malaysia

² School of Civil Engineering, College of Engineering, Universiti Teknologi MARA, Pasir Gudang Campus, Johor, Malaysia

* Corresponding Author: musmuliadi@uitm.edu.my

Accepted: 15 April 2023 | Published: 30 April 2023

DOI: <https://doi.org/10.55057/ijares.2023.5.1.27>

Abstract: *Entrepreneurship courses have been a part of the Malaysian university curriculum for the past 30 years, catering to students from business, science, and technology backgrounds. This study aims to investigate the perceptions and interest levels of civil engineering students towards the ENT600: Technology Entrepreneurship course. The research employs a quantitative approach through a survey design study, collecting data from 65 respondents through questionnaires. The collected data were analyzed using IBM SPSS version 28.0 software, employing descriptive analysis and independent t-test. The study results reveal that students hold a positive view of the course, with an increase in their knowledge and an improvement in learning abilities. The course generates a sense of satisfaction and enthusiasm among the students. Moreover, female students exhibit a higher level of interest in the course than male students, suggesting possible gender differences in the factors that influence student interest. The findings indicate the need for educators and course designers to consider these factors to develop and deliver courses that are inclusive and engaging for all students. However, the study has limitations, including a small sample size and a focus on a single course. Future research should explore the factors influencing students' interest in different courses and investigate the potential role of gender in shaping these factors.*

Keywords: Perception, Interest, Technology Entrepreneurship, Civil Engineering

1. Introduction

An entrepreneurship course at university can equip students with the essential skills and knowledge needed to identify potential business opportunities, develop a viable business plan, and successfully launch and manage a business venture. Such a course encourages innovation, increases job opportunities, enhances global competitiveness, and boosts the economy (Bennett, 2006; Grecu & Denes, 2017). Additionally, students can learn about marketing and sales strategies, financial management, and legal considerations crucial to a small business's success (Hossain, 2021). Furthermore, an entrepreneurship course can provide students with opportunities to network and connect with successful entrepreneurs, industry experts, and other key stakeholders in the business community (Doan, 2022).

In Malaysia, entrepreneurship is becoming a crucial driver of the Malaysian economy and many universities are offering entrepreneurship courses to facilitate this trend. This increasing focus on entrepreneurship courses reflects the changing dynamics of work and careers for graduates as they seek new avenues to build their dreams (Ali et al., 2019 & Adam et al., 2022). For example, at Universiti Teknologi MARA (UiTM), structured entrepreneurship courses were introduced in 1988, starting with the Fundamentals of Entrepreneurship (ETR300). Students now have the opportunity to specialize in entrepreneurship as a degree program, and UiTM also offers the Technology Entrepreneurship course (ENT600) for science and technology undergraduates. This course aims to provide knowledge of entrepreneurship and encourage graduates from science and technology fields to choose entrepreneurship as a career (Kementerian Pengajian Tinggi Malaysia, 2011).

It can be argued that entrepreneurship has become a necessary subject for students, whether they are pursuing a business or non-business field at higher education institutions (Mohd Aziz et al., 2018). However, for business students, entrepreneurship courses may not be an issue as it is already part of their curriculum. The question is, what about students in science and technology fields, particularly those from civil engineering backgrounds? It is undoubtedly different from business students and other fields including civil engineering students. Therefore, research is needed to examine the general perceptions and interest levels of civil engineering students toward entrepreneurship courses, especially the ENT600:Technology Entrepreneurship course. There are three (3) questions will be answered through this study which is:

- i. What are civil engineering students' general perceptions of the ENT600:Technology Entrepreneurship course?
- ii. What is the level of interest among civil engineering students toward the ENT600:Technology Entrepreneurship course?
- iii. Is there a difference in interest levels between male and female students towards the ENT600:Technology Entrepreneurship course?

2. Methodology

This study uses a quantitative approach through a survey research design. The study aims to investigate the perceptions and level of interest among civil engineering students towards the course ENT600:Technology Entrepreneurship. The study population consists of students who are taking the course ENT600:Technology Entrepreneurship for the October 2022-February 2023 session at a local university in Malaysia. A questionnaire was used to gather feedback from the students. The questionnaire consists of 3 sections, namely Section A: Respondent Profile, Section B: General Perception, and Section C: Level of Interest. A total of 65 responses were collected and the data were analyzed using IBM SPSS version 28.0 software, using descriptive statistical analysis and independent sample t-test (to examine the differences in the level of interest between male and female students). The overall interpretation of perceptions and level of interest among students are presented in Table 1 and Table 2.

Table 1: Perception Interpretation (Modified from Sözen & Güven, 2019)

Mean	Interpretation
4.21-5.00	Strongly Agree
3.41-4.20	Agree
2.61-3.40	Neither / Nor Agree
1.81-2.60	Disagree
1.00-1.80	Strongly Disagree

Table 2: Level of Interest Interpretation (Modified from Talib, 1996)

Mean	Interpretation
2.51-3.00	High
1.51-2.50	Moderate
1.00-1.50	Low

Table 1 is an assessment indicator used to determine the general perception of students towards the course ENT600: Entrepreneurship Technology. The assessment indicators are classified into five levels: strongly agree (mean range between 4.21-5.00), agree (mean range between 3.41-4.20), neither/nor agree (mean range between 2.61-3.40), disagree (mean range between 1.81-2.60), and strongly disagree (mean range between 1.00-1.80). On the other hand, Table 2 is an assessment indicator used to evaluate the level of interest among civil engineering students toward the course ENT600: Entrepreneurship Technology. The assessment indicators are classified into three levels: low (1.00-1.50), moderate (1.51-2.50), and high (2.51-3.00).

3. Finding And Analysis

Table 3 shows the details of the respondent background for this study. Based on the information provided, the sample size consists of 65 students, with 23 (35.4%) male students and 42 (64.6%) female students. The age range of the respondents is between 21-23 years old, with 44 individuals (67.7%), and 21 individuals (32.3%) aged 23 years and above. All respondents are students in the 7th semester of the EC220 program.

Table 3: Respondent Background

Criteria		Frequency	Percent	Valid Percent	Cumulative Percent
Age					
Valid	21-23 years	44	67.7	67.7	67.7
	23 years and above	21	32.3	32.3	100.0
	Total	65	100.0	100.0	
Gender					
Valid	Male	23	35.4	35.4	35.4
	Female	42	64.6	64.6	100.0
	Total	65	100.0	100.0	
SEMESTER					
Valid	7	65	100.0	100.0	100.0
PROGRAM					
Valid	EC220	65	100.0	100.0	100.0

Analysis of Civil Engineering Students' General Perception Toward ENT600:Technology Entrepreneurship Course

Table 4 shows the descriptive statistics for four statements related to the perception of the students towards the ENT600:Technology Entrepreneurship course. The "N" column shows the number of valid responses for each statement, which is 65 in this case. The "Minimum" and "Maximum" columns indicate the lowest and highest values, respectively, that were selected by the respondents. The "Sum" column shows the total of all the values selected for each statement. The "Mean" column represents the average value of all the responses, which can range from 1 to 5. The "Std. Deviation" column shows the measure of variability or spread of the responses around the mean value.

Table 4: Descriptive Statistic of Students' Perception Toward the Course

Descriptive Statistics						
Items	N	Minimum	Maximum	Sum	Mean	Std. Deviation
The content of this course is related to my field of study.	65	1	5	235	3.62	1.011
The assessment method used in this course has improved my learning ability.	65	2	5	250	3.85	.870
My confidence level in this course has increased.	65	2	5	256	3.94	.882
This course has provided me with more knowledge.	65	2	5	274	4.22	.739
Valid N (listwise)	65					

Based on the table, the statement “The content of this course is related to my field of study” has a mean of 3.62, which indicates that the students somewhat agree that the course content is related to their field of study. The standard deviation of 1.011 suggests that there is some variability in the responses, with some students strongly agreeing and others strongly disagreeing with the statement. The statement “The assessment method used in this course has improved my learning ability” has a higher mean of 3.85, indicating that the students generally agree that the assessment methods have been effective in improving their learning ability. The lower standard deviation of .870 suggests that the responses are less variable than the previous statement. The statement “My confidence level in this course has increased” has an even higher mean of 3.94, indicating that the students generally agree that their confidence level has increased as a result of taking the course. The standard deviation of .882 suggests that there is some variability in the responses, but less so than the first statement. The statement “This course has provided me with more knowledge” has the highest mean of 4.22, indicating that the students strongly agree that the course has provided them with more knowledge. The standard deviation of .739 suggests that the responses are relatively consistent and less variable than the other statements. In conclusion, these findings suggest that the course content is related to the student’s field of study and has provided them with valuable knowledge.

Analysis of the Level of Interest among Civil Engineering Students Toward the ENT600:Technology Entrepreneurship Course

Table 5 presents descriptive statistics for six items related to the ENT600 course. The sample size for each variable is 65, which represents the number of individuals who responded to the questions. The variables are measured on a scale from 1 to 3, where 1 means “disagree”, 2 means “neutral”, and 3 means “agree”. The “Minimum” column shows the lowest value for each variable, which is 1 for all of them. The “Maximum” column shows the highest value for each variable, which ranges from 3 for all of them. The “Sum” column shows the total score for each variable, which is the sum of all the responses. For example, the total score for "I like attending the ENT600 class" is 85, indicating that on average, participants agree with this statement. The “Mean” column shows the average score for each variable, which is the sum divided by the sample size. For example, the mean for “I enjoyed studying the ENT600 course” is 1.42, indicating that on average, participants are slightly more likely to agree with this statement than disagree. The “Std. Deviation” column shows the amount of variability in the responses for each variable. For example, the standard deviation for “Doing the ENT600 assignment gave me a sense of satisfaction” is .687, indicating that there is a considerable amount of variability in the responses to this statement.

Table 5: Descriptive Statistic of Students' Level of Interest Toward the Course

Descriptive Statistics						
	N	Minimum	Maximum	Sum	Mean	Std. Deviation
I like attending the ENT600 class	65	1	3	85	1.31	.528
I enjoyed studying the ENT600 course	65	1	3	92	1.42	.583
I don't like skipping ENT600 class	65	1	3	91	1.40	.607
I am always enthusiastic in ENT600 class	65	1	3	93	1.43	.558
Doing the ENT600 assignment gave me a sense of satisfaction	65	1	3	109	1.68	.687
I always complete ENT600 assignments	65	1	3	69	1.06	.300
Valid N (listwise)	65					

Based on the indicator provided in Table 2, which categorizes mean scores into “high”, “moderate”, and “low”, the results suggest that students' level of interest in the ENT600 class is generally low. The mean scores for all six variables are below the average category threshold of 2.50. For example, the mean score for “I like attending the ENT600 class” is 1.31, indicating that, on average, students do not have a high level of interest in attending the class. Similarly, the mean score for “I enjoyed studying the ENT600 course” is 1.42, indicating that, on average, students do not find the course particularly enjoyable. The mean scores for “I don't like skipping ENT600 class” and “I am always enthusiastic in ENT600 class” are also low, suggesting that students do not perceive skipping the class or participating in it with high levels of importance. However, the mean score for “Doing the ENT600 assignment gave me a sense of satisfaction” falls in the “moderate” category, indicating that students derive some satisfaction from completing the assignments for the class. Overall, based on this indicator, the results suggest that students have a generally low level of interest in the ENT600 class, except for some satisfaction derived from completing assignments.

Analysis of the Difference in Interest Levels Between Male and Female Students Towards the ENT600: Technology Entrepreneurship Course

The group statistics in Table 6 show that the mean score for interest level in the ENT600 course is higher for female students (M = 8.76) compared to male students (M = 7.43).

Table 6: Group Statistic for SUM_Students Interest

Group Statistics					
	Gender	N	Mean	Std. Deviation	Std. Error Mean
SUM_INTEREST	Male	23	7.4348	1.72748	.36020
	Female	42	8.7619	2.70329	.41713

Table 7: Independent Sample Test for SUM_Students Interest

Independent Samples Test											
		Levene's Test for Equality of Variances		t-test for Equality of Means							
		F	Sig.	t	df	Significance		Mean Difference	Std. Error Difference	95% Confidence Interval of the Difference	
						One-Sided p	Two-Sided p			Lower	Upper
SUM_INT EREST	Equal variances assumed	5.470	.023	-2.125	63	.019	.038	-1.32712	.62461	-2.57530	-.07895
	Equal variances not assumed			-2.408	61.359	.010	.019	-1.32712	.55113	-2.42904	-.22520

Then, the independent samples t-test results shown in Table 7 indicate that there is a statistically significant difference in interest level between male and female students ($t(63) = -2.125$, $p = .019$, two-tailed), with female students showing a significantly higher interest level compared to male students. Additionally, Levene's test for equality of variances indicates that the assumption of equal variances is violated ($p = .023$), and thus the results for the t-test with equal variances not assumed should be interpreted instead, which still shows a significant difference. Therefore, it can conclude that there is a significant gender difference in interest level towards the ENT600:Technology Entrepreneurship course, with female students showing a higher interest level compared to male students. The higher level of interest among female students may be due to various reasons, such as their perceived relevance of the course to their career goals or personal interests. Moreover, the course content and teaching methods may be more engaging and appealing to female students.

4. Discussion and Conclusion

Based on the preceding findings, the study concludes that civil engineering students have a positive perception of the ENT600:Technology Entrepreneurship course. The course content is relevant to their field of study increases their knowledge and boosts their confidence levels. The assessment methods used in the course also enhance their learning abilities. Overall, the course generates satisfaction and enthusiasm among the students, who enjoy attending class, studying the material, and completing assignments. These results are consistent with previous studies showing that entrepreneurship education is vital in today's fast-changing world. Such education can equip students with the skills and competencies necessary for success in entrepreneurship and innovation while promoting creativity, critical thinking, and problem-solving abilities (Wei et al., 2019 & Boldureanu et al., 2020).

Moreover, the analysis of the ENT600:Technology Entrepreneurship course data shows a significant difference in the interest levels of male and female students, with female students demonstrating a higher level of interest than their male counterparts. These findings suggest that there may be gender differences in the factors influencing student interest in the course, such as perceived relevance to career goals or personal interests (Contreras-Barraza et al., 2021). Educators and course designers must consider such factors while developing and delivering courses to ensure inclusivity and engagement for all students.

However, the study's limitations include the fact that the data was collected from a single course and a limited sample size, making it potentially unrepresentative of the entire student population. Additionally, the study did not investigate the underlying factors that may be driving the gender differences in interest levels. Future research could explore these factors to enable educators and course designers to create courses that are more inclusive and engaging for all students, regardless of gender.

References

- Adam, S., Fuzi, N. M., Senin, A. A., Chuin, T. P., & Hairon, A. (2022). The Effectiveness of Digital Entrepreneurship towards Higher Education Institution in Malaysia: The Case of B40 Students in Southern Region Universities. *International Journal of Academic Research in Business & Social Sciences*, 12(6). <https://doi.org/10.6007/ijarbss/v12-i6/14088>

- Ali, A. J., Khalid, J., Ali, M. H., & Razali, R. (2019). Social Entrepreneurship and Its Impact on Society: Special Social-Entrepreneurs @Higher Education Programme in Malaysia. *International Conference on Community Development*. <https://doi.org/10.33068/iccd.vol2.iss1.140>
- Bennett, R. (2006). Business lecturers' perceptions of the nature of entrepreneurship. *International Journal of Entrepreneurial Behaviour & Research*, 12(3): 165 – 188.
- Boldureanu, G., Ionescu, A. M., Bercu, A., Bedrule-Grigoruță, M. V., & Boldureanu, D. (2020). Entrepreneurship Education through Successful Entrepreneurial Models in Higher Education Institutions. *Sustainability*, 12(3), 1267. <https://doi.org/10.3390/su12031267>
- Contreras-Barraza, N., Espinosa-Cristia, J. F., Salazar-Sepúlveda, G., & Vega-Muñoz, A. (2021). Entrepreneurial Intention: A Gender Study in Business and Economics Students from Chile. *Sustainability*, 13(9), 4693. <https://doi.org/10.3390/su13094693>
- Doan, H. K. (2022) "The differences in the impact of entrepreneurship education on entrepreneurial knowledge: a cross-country analysis," *Management & Marketing Challenges for the Knowledge Society*, 17(1), p. 73-97. Available at: <https://doi.org/10.2478/mmcks-2022-0005>.
- Greco, V., & Denes, C. (Eds.). (2017). *Benefits of entrepreneurship education and training for engineering students* (Vol. 121). https://www.matec-conferences.org/articles/mateconf/pdf/2017/35/mateconf_mse2017_12007.pdf
- Hossain, S. (2021). Factors Influencing Sustainable Entrepreneurial Practices: Looking at Individual-Level Factors through Conventional Entrepreneurial Perspectives. *The International Journal of Business & Management*, 9(8). Available at: <https://doi.org/10.24940/theijbm/2021/v9/i8/bm2108-046>.
- Kementerian Pengajian Tinggi Malaysia. (2011). *Pelan strategik pengajian tinggi: Koleksi aktiviti terpilih siri 2*. Kementerian Pengajian Tinggi. <http://apps-cfm.ump.edu.my/staff/estrategi/dokumen/pdf/Koleksi%20Aktiviti%20Terpilih%20Siri%202.pdf>
- Mohd Aziz, N. E., Harun, N., Mohd Esa, M., Yaacob, M. R., & Ab. Rahman, A. A. (2018). Pendidikan Keusahawanan Di Institusi Pengajian Tinggi (IPT) Dalam Melahirkan Usahawan Berjaya di Malaysia. *Jurnal Inovasi Perniagaan*, 3(1), 73–85. <https://www.kuim.edu.my/journal/index.php/JBI/article/viewFile/431/363>
- Sözen, E., & Güven, U. (2019). The Effect of Online Assessments on Students' Attitudes Towards Undergraduate-Level Geography Courses. *International Education Studies*, 12(10), 1. <https://doi.org/10.5539/ies.v12n10p1>
- Talib, G. H. (1996). *Pembinaan Instrumen: Ceramah Kursus Penyelidikan Pendidikan*. Malaysia: Kementerian Pendidikan Malaysia
- Wei, X., Xiaolang, L., & Sha, J. (2019). How Does the Entrepreneurship Education Influence the Students' Innovation? Testing on the Multiple Mediation Model. *Frontiers in Psychology*, 10. <https://doi.org/10.3389/fpsyg.2019.01557>