Influential Factors in the Decision to Pursue a Bachelor's Degree in Computer Engineering and Artificial Intelligence at the School of Engineering and Technology, Walailak University

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ABSTRACT

Background and Objectives: University education is essential for empowering individuals and fostering economic, social, and intellectual growth. In Thailand, fair and competitive university admissions are ensured across 75 institutions by the Thai University Center Admission System (TCAS). At the same time, each individual's decision to pursue higher education is influenced by the quality of program's curriculum and academic reputation, along with geographical considerations and parental guidance. This study investigates factors influencing the decision to pursue a bachelor's degree in Computer Engineering and Artificial Intelligence (CEAI) at Walailak University, focusing in particular on their revised curriculum. Insights gained aim to enhance curriculum alignment, boost recruitment, and meet the diverse needs of students.

Methodology: This study employed an exploratory approach, using descriptive statistics and multiple regression analysis. The population consisted of 126 students enrolled in the CEAI program at Walailak University in 2022. A sample of 96 participants were randomly selected and voluntarily completed an online questionnaire. The questionnaire, distributed via academic platforms and social media, elicited demographic information and explored factors influencing participants' decision to pursue this degree.

Main Results: The results showed that curriculum factors had the greatest impact on the decision to pursue the program, followed by financial factors, educational institution factors, and personal reasons. The t-test results indicated that gender impacted decision regarding course enrollment and the total monthly income of the family affected the decision as to whether or not to enroll at a particular institution.

Discussions: This study revealed key factors influencing enrollment decisions for CEAI students at Walailak University. Curriculum relevance, faculty expertise, and financial considerations emerged as their primary concerns. Notably, female students valued curriculum aspects more highly than their male counterparts, yet they remain underrepresented, highlighting persistent gender stereotypes in engineering. Income- related differences significantly impacted perceptions of financial factors. To address these findings, we recommend: (1) curriculum- focused marketing emphasizing industry relevance, (2) targeted outreach to female students, (3) expanded financial support and transparency, and (4) enhanced public relations leveraging social media and outreach programs. These strategies aim to create a more diverse and inclusive program, aligning with global trends in STEM education and workforce development.

Conclusions: The study reveals that curriculum factors, particularly job market relevance and faculty expertise, are most important to students in Walailak University's CEAI program. Gender and income related differences significantly influence student perspectives. These insights can help improve program quality, develop targeted admission strategies, and better serve diverse student needs.

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Introduction

University education is essential as it empowers individuals and opens the door to economic opportunities. Moreover, it fosters social development and well-being along with critical thinking, while it drives innovation and prepares students with the lifelong learning skills they need for advanced careers (Arwae & Paiboon, 2020; Julakat, 2021). To attend classes in Thailand, prospective students must apply through TCAS (Thai University Center Admission System), which includes 75 higher education institutions. This system aims to ensure the fair and efficient selection of students and maintains strict rules against duplicate applications. The Council of Presidents of Thailand mandates synchronized application periods for all 75 TCAS institutions to increase competition and expand student choice. The field of Computer Engineering and Artificial Intelligence, hereafter CEAI, has become increasingly relevant in Thailand's technological landscape. As the country strives to advance its digital economy and industry 4.0 initiatives, the demand for skilled professionals in these areas has surged. Universities play a pivotal role in nurturing talent to meet this growing demand, making it essential to understand the factors influencing students' decisions to pursue these fields.

Despite the growing importance of CEAI, there is a lack of comprehensive understanding regarding the factors influencing students' decisions to pursue these fields at specific institutions. This gap in knowledge hinders universities' abilities to effectively attract and retain talented students, potentially impacting the quality and quantity of graduates in this crucial sector. At Walailak University, the recently revised curriculum in CEAI presents a unique opportunity to examine these decision-making factors in the context of an updated, modern program. Understanding these influences is critical for optimizing recruitment strategies, curriculum development, and resource allocation, ultimately contributing to the advancement of Thailand's technological workforce.

This literature review primarily focuses on studies conducted in Thailand due to the unique cultural, educational, and economic context of the country. The Thai higher education system, including the TCAS admission process, presents specific challenges and opportunities that are best understood through local research. However, it is important to acknowledge that valuable insights can also be drawn from international studies on factors influencing students' higher education choices. In the UK, for instance, Briggs (2006) found that academic reputation, distance from home, and job prospects were key factors in university choice. In the USA, Chapman (1981) developed a model of student college choice that emphasized the influence of student characteristics, external influences, and college characteristics. These international perspectives provide a broader context for interpreting our findings in Thailand.

A comprehensive exploration of various research studies provides valuable insights into the many factors influencing students' decisions in pursuit of higher education. These factors include curriculum content, academic reputation, institutional image, financial considerations, and personal reasons (Kasemsarn, 2014; Mitsanthia et al., 2020; Yafu, 2021). Gatebute and Thongpad (2020) focused on the Faculty of Science at Mahidol University, revealing the significance of curriculum, academic reputation, pride, and future expectations. Khantaku et al. (2022) extended this understanding by studying factors influencing the decision to pursue a bachelor's degree at Suranaree University of Technology, emphasizing regional, GPA, and admission form variations. Phetcharat (2020) conducted a systematic literature review that highlighted internal, external, and interpersonal factors as critical influencers in both university and program selections. Promsen et al. (2022) delved into student decision-making processes at the University of Phayao, focusing on decisions to waive admission offers, where parental influence was found to play a central role. Sorat et al. (2022) provided further insights into decision-making factors at the University of Phayao, emphasizing overall institutional impact and public relations schemes. At Khon Kaen University, Srisontisuk et al. (2020) shed light on the influence of factors including public relations in decision-making, recommending

enhancements in communication and support systems. Suwaphanich's (2022) investigation into Maejo University emphasized the importance of the academic curriculum in shaping students' decisions and satisfaction levels. Tirakoat et al. (2021) delved into factors influencing the decision to study in the field of Informatics, revealing variations based on students' majors. This underscores the need for tailored approaches to meet diverse needs within the Informatics field. Collectively, these studies provide a foundation for future research on higher education program selection and offer practical implications for institutions aiming to refine strategies and attract a diverse range of applicants. Understanding the nuanced factors that influence students' decisions allows institutions to tailor their approaches and create an environment conducive to effective teaching, learning, and overall student satisfaction. These Thai studies, while specific to the national context, echo some findings from international research, such as the importance of curriculum, institutional reputation, and future career prospects. However, they also highlight unique factors like the influence of TCAS and regional preferences, underscoring the need for context-specific research in Thailand. Despite valuable insights from previous studies on factors influencing higher education enrollement decisions, a significant gap exists in the literature regarding CEAI programs in Thailand. Most research has focused on general academic fields or universities, which lack the specificity needed to view this rapidly evolving technological discipline.

Our study addresses this gap by focusing on the recently revised CEAI program at Walailak University. This approach allows us to analyze decision-making factors within the context of a modernized curriculum responding to current labor market demands. Unlike previous studies, we consider the impact of curriculum changes and analyze relationships between demographic factors (gender, hometown, family income) and enrollment decisions, providing a more comprehensive view of students' decision-making processes (Kaewkam & Arpavate, 2021). While Gatebute and Thongpad (2020) and Khantaku et al. (2022) examined decision-making factors for general science and technology programs, and Boonpit and Mettarikanon (2022) studied similar factors in Digital Content and Media at Walailak University, our research specifically addresses the unique considerations of a combined CEAI curriculum. This distinction is crucial given the rapid evolution and increasing global importance of these fields. By addressing this literature gap, our study offers valuable insights for educational institutions and policymakers on designing and promoting advanced technology programs aligned with student needs and market expectations. Our findings can inform more effective student recruitment strategies and aid in curriculum refinement, ultimately serving both learners and the job market in this specialized field.

This research aims to investigate the factors influencing the decision to pursue a bachelor's degree in the CEAI program at the School of Engineering and Technology, Walailak University, with a special focus on the revised curriculum introduced in the 2021 academic year. The updated curriculum emphasizes modernization and responsiveness to the evolving needs of graduates, graduate employers, and the global job market. The study seeks to provide valuable information to enhance curriculum alignment with individual needs, ultimately increasing the number of applicants andachieving target enrollments, while maximizing the benefits of educational policies and budget allocations. The reserach objectives are as follows:

1. To comprehensively examine the factors that current students in the CEAI program at the School of Engineering and Technology, Walailak University, consider important in their educational experience.
2. To conduct a comparative analysis of the factors affecting the decision to pursue a bachelor's degree in the CEAI program at the School of Engineering and Technology, Walailak University.

By achieving these objectives, this research aims to inform curriculum development, admissions criteria, and promotional strategies, thereby fostering an environment that attracts prospective students and meets their diverse range of needs.

Methodology

This study adopts an exploratory approach, employing descriptive statistics and comparative analyses (t-tests and one-way ANOVA) for data examination. The exploratory approach is particularly suitable due to the novelty of the recently revised CEAI program, the complex nature of choosing an educational institution, and the limited existing research in this specific context. It also allows us to examine various potential influences without bias and establish a foundation for future focused research.

Participants and Sampling

This research focuses on the population of current students enrolled in the CEAI program at the School of Engineering and Technology at Walailak University during the 2022 academic year, which consists of 126 individuals. The sample size was determined using Yamane's (1973) equation with a 95% confidence level and an acceptable error limit of 0.05. Thus, a random sample of at least 96 participants was required. This equation was selected due to its appropriateness for a known and finite population, along with its widespread use in social science research. It is particularly suitable for our exploratory study of a relatively small, homogeneous population, ensuring statistical validity without oversampling. It allows us to obtain a comprehensive yet manageable dataset that accurately represents the perspectives of students. Participation in the research was voluntary and those willing to take part completed an online questionnaire.

Instrument

The data collection process utilized an online questionnaire administered through Google forms. A dedicated page sought participants' consent and provided information about the research project. Promotion of the study occurred through participants' course academic platforms and the official course and school Facebook pages. Students opting to engage in the research voluntarily accessed and completed the questionnaire via the link provided by the researcher. Conversely, non-participation did not entail any obligation to complete the survey. The questionnaire comprised three distinct sections:

A. General information: This section encompassed nine items focusing on the respondents' demographic details.

B. Factors influencing the decision to pursue a bachelor's degree in the CEAI program at the School of Engineering and Technology at Walailak University: This section contained four sub-sections, each addressing specific aspects:

- Educational institution factors (10 items)
- Financial factors (5 items)
- Curriculum factors (10 items)
- Personal factors (5 items)

In total, there were 30 items, with each offering five response levels pertaining to the factor in question:

- Level 1 least importance
- Level 2 low importance
- Level 3 medium importance
- Level 4 high importance
- Level 5 utmost importance

The interpretation criteria were adapted from several recent studies in the Thai context (Ammawongchit et al., 2022; Boonpit & Mettarikanon, 2022; Kaewkam & Arpavate, 2021).

C. Other Suggestions: This section allowed participants to provide additional comments or suggestions.

The structured questionnaire design ensured comprehensive coverage of the relevant factors influencing students' decisions with a systematic rating scale for nuanced responses.

Variable Selection for Analysis

The variables selected for analysis in this study were carefully chosen based on the following criteria:

1. Alignment with Research Objectives: The selected variables directly correspond to our research aims of examining factors influencing students' decisions to pursue a bachelor's degree in CEAI at Walailak University. For instance, we included variables related to curriculum, financial considerations, and institutional factors to comprehensively address our research questions.
2. Literature Review Findings: Our variable selection was informed by previous research in the field. For example, studies by Gatebute and Thongpad (2020) and Khantaku et al. (2022) highlighted the importance of curriculum quality, institutional reputation, and financial factors in students' decision-making processes and thus, we incorporated these key factors into our study.
3. Context Specificity: We included variables that are particularly relevant to the context of Walailak University and the CEAI program. For instance, we considered the university's cooperative education system and its global ranking, which are both unique aspects of Walailak University's offerings.
4. Demographic Considerations: Variables such as gender, hometown, GPA, and family income were included to allow for comparative analysis. These demographic factors have been shown to influence educational decisions in previous studies (e.g., Kongsumruay & Buasook, 2022; Kenbanpao et al., 2021).
5. Comprehensive Factor Coverage: We ensured that our variables covered a wide range of potential influencing factors by categorizing them into four main groups: educational institution factors, financial factors, curriculum factors, and personal reasons factors. This comprehensive approach allows for a holistic understanding of the decision-making process.
6. Measurability and Data Accessibility: We selected variables that could be reliably measured through our questionnaire method and for which data could be readily obtained from our student participants.

By applying these criteria, we aimed to select variables that would provide the most relevant and insightful data for addressing our research questions and contributing to the broader understanding of factors influencing higher education choices in the field of CEAI.

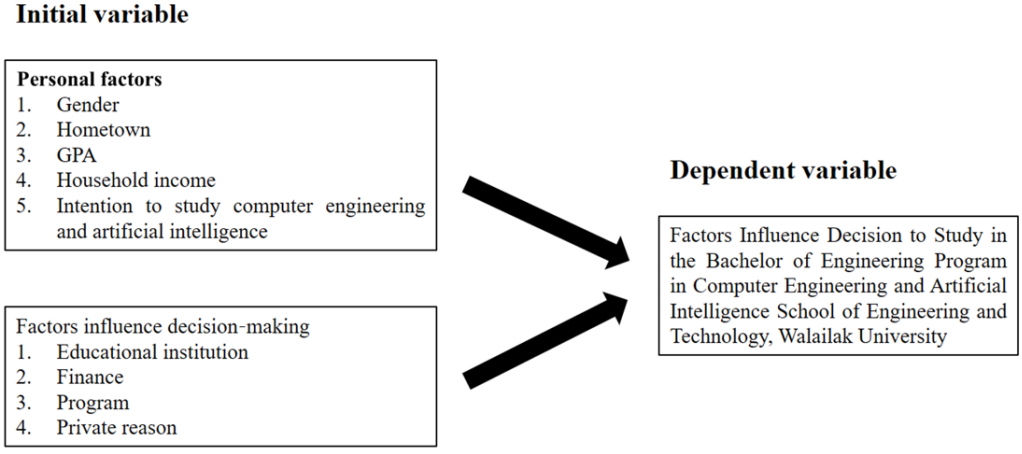

Figure 1 The Research Conceptual Framework
Adapted from Gatebute and Thongpad (2020) and Khantaku et al. (2022)

Data Analysis

1. Quantitative Data Analysis:

A. Examination of General Respondent Information: Enumerating the frequency (Frequency) and computing the percentage (Percentage).

B. Analysis of Factors Influencing Decision-Making at the bachelor's degree level in the CEAI program, School of Engineering and Technology, Walailak University:

- Utilizing mean (Mean) and standard deviation (SD) analysis.
- Comparison with predefined criteria for interpreting results based on the following grading scale:
- 4.21 - 5.00: Highest level of influence on decision-making
- 3.41 - 4.20: High level of influence on decision-making
- 2.61 - 3.40: Moderate effect on decision-making
- 1.81 - 2.60: Low influence on decision-making
- Lower than 1.80: Least influence on decision-making

C. Analysis of factors related to studying in the bachelor's degree program in CEAI, School of Engineering and Technology, Walailak University: employing Independent Sample T-Test for comparing two groups (e.g., gender, hometown). Using one-way analysis of variance (One-Way ANOVA) for comparing more than two groups (e.g., GPA categories, income levels). Calculating Pearson's correlation coefficients to examine relationships between various factors.

2. Feedback Data Analysis:

- Content analysis methods (Content Analysis) were applied, involving the organization and classification of data.
- Data coding (Coding) facilitated systematic categorization.
- Data interpretation (Interpretative Practice) was conducted, and the findings were presented through lectures and descriptive reports detailing the study's results.

Ethical Consideration

The experiments followed the standards for human research ethics authorized by the Office of the Human Research Ethics Committee of Walailak University (WU-EC-EN-2-006-65, approval date: 28 January 2022).

Findings

This study examined factors that current students in the CEAI program at Walailak University consider important in their educational experience. It is important to note that all respondents are already enrolled in the program, thus the analysis focuses on their perceptions rather than the decision-making factors of prospective students.

Findings Part 1: Personal Factors

Upon summarizing the personal factors derived from 108 participants' responses to the questionnaire, several noteworthy trends were identified. The key observations are as follows:

A. Gender Distribution: Most respondents are male, constituting 69.4% of the participant pool.

B. Residential Location: Many students reside in Nakhon Si Thammarat Province, representing 35.3% of the cohort.

C. Cumulative GPA Distribution: Approximately 62% of the students achieved a cumulative GPA at the end of Mathayom 6, falling within the range of 3.01-3.50.

D. Family Monthly Income: A notable segment (36.1%) reported a monthly family income of 20,000-30,000 baht.

E. Academic Aspirations: The majority of students (61.1%) expressed the highest intent to pursue studies in the CEAI program at the School of Engineering and Technology at Walailak University.

Findings Part 2: Factors Influencing the Decision to Pursue a Bachelor's Degree

From Table 1, the analysis reveals that the determinants influencing the decision to pursue a bachelor's degree in the CEAI program at the School of Engineering and Technology, Walailak University, were generally rated at a high level, attaining an average score of 3.77. Upon closer examination of specific aspects, it was evident that the curriculum held the highest sway on decision- making, garnering the top position with an average score of 4. 29. Subsequently, financial considerations followed closely behind, registering an average score of 3.77, whereas other factors attained an average score of 3.87. These findings align with previous studies that have identified multiple influential factors in students' higher education choices (Kasemsarn, 2014; Mitsanthia et al., 2020; Yafu, 2021).

Table 1. The Mean and Standard Deviation of Factors Influencing the Overall Decision to Pursue Academic Studies

Index	Factors	*N* = 108		Interpretation
		Mean	*S.D.*	
1	Educational institution factor	3.69	0.31	High
2	Financial factor	3.87	0.10	High
3	Curriculum factor	4.29	0.21	Highest
4	Private reason	3.21	0.35	Moderate
	Average	3.77	0.45	High

According to Table 2, the determinants among respondants that influence their decision to pursue a bachelor's degree in the CEAI program (specifically concerning educational institutions) are rated at a high level, with an average score of 3.69. Further scrutiny reveals the factor in the top position carrying the most substantial impact to be that of the expertise of professors and personnel, boasting an average score of 4.49. Following closely behind came consideration for how well the university is equipped with modern classrooms and laboratory facilities, with an average score of 4.44.

Table 2. The Mean and Standard Deviation of Factors Influencing Decision-making Regarding an Educational Institution

No.	Factors	*N* = 108		Interpretation
		Mean	*S.D.*	
1	It is a highly regarded and widely recognized university within the community.	94.3	0.78	High
2	It is a premier institution known for its excellence in education, research, and cutting-edge innovation and technology.	16.4	0.71	High

Table 2. (Cont.)

No.	Factors	*N* = 108		Interpretation
		Mean	*S.D.*	
3	It is a university that produces highly skilled and in-demand graduates sought after by employers.	19.4	0.69	High
4	World University Rankings	05.4	0.70	High
5	It is a university equipped with state-of-the-art classrooms and cutting-edge laboratories.	44.4	0.60	Highest
6	It is a university with a strong cooperative education system.	23.4	0.79	Highest
7	It is a university with professors and personnel with expertise.	49.4	0.62	Highest
8	It is a university located in the student's hometown or community.	43.3	1.38	High
9	It is a university with a range of convenient facilities to support student living, including transportation, dormitories, dining options, and access to essential services.	00.4	1.07	High
	Average	69.3	1.28	High

According to Table 3, the analysis reveals that financial considerations are rated high among determinents influencing the decision to pursue a bachelor's degree in the CEAI program with an average score of 3.87. Upon closer examination of individual items, it is evident that the factor holding the most significant impact on decision-making is dormitory fees, which achieved an average score of 4.01. Living expenses follow closely behind, attaining an average score of 3.94.

Table 3. The Mean and Standard Deviation of Factors Influencing Decision-making Regarding Finance

No.	Factors	*N* = 108		Interpretation
		Mean	*S.D.*	
1	Educational expenses	3.70	0.98	High
2	Books and learning materials	3.82	0.10	High
3	Cost of living	3.94	0.92	High
4	Dormitory fee	4.01	0.89	High
5	Travel expenses	3.86	0.93	High
	Average	3.87	0.10	High

From Table 4, we found that the factors regarding CEAI program highly affected the decision to study CEAI program at Walailak University. The respondents regarding curriculum were at the highest level, with an average of 4.29. When considering each item, it was found that the greatest impact on decision making was whether courses offered are in demand in the job market, with an average of 4.49. This was followed by courses with professors and personnel with expertise, which averaged 4.45.

Table 4. The Mean and Standard Deviation of Factors Influencing Decision-making Regarding the Program

No.	Factors	*N* = 108		Interpretation
		Mean	*S.D.*	
1	The program offered are in high demand and current with contemporary trends.	4.40	0.72	Highest
2	The program offered are highly sought after by employers in the job market	4.49	0.63	Highest
3	The program offered meet the needs of the learners.	4.44	0.66	Highest
4	The program offered are exclusive and can only be found at this institution.	3.81	1.02	High
5	The program has funding sources to support education (scholarships, etc.).	4.04	1.08	High
6	The program has a distinctive, modern name.	4.29	0.84	Highest
7	The program offers a wide range of co-curricular, interesting and professional experiences.	4.34	0.74	Highest
8	The program incorporates a robust cooperative education system, facilitating successful career placement.	4.32	0.67	Highest
9	The program has a high graduate employability rate.	4.33	0.67	Highest
10	The program has professors and personnel with expertise.	4.45	0.63	Highest
	Average	4.29	0.21	Highest

According to Table 5, the examination of factors concerning personal reasons that influenced the decision to study CEAI program, revealed a moderate level, with an average score of 3.21. Upon dissecting individual items, it was evident that the factor wielding the most substantial impact on decision-making was whether the family supported the decision to study

at the institution, achieving an average score of 3.57. Following closely behind was the motivation to save money for the family (due to its proximity to home), with an average score of 3.49.

Table 5. The Mean and Standard Deviation of Factors Influencing Decision-making Regarding Personal Reasons

No.	Factors	*N* = 108		Interpretation
		Mean	*S.D.*	
1	My family strongly supports my decision to pursue my education at this institution.	3.57	1.19	High
2	There are alumni or classmates from my previous school who have chosen to continue their education at this institution.	3.28	1.29	Moderate
3	My siblings or relatives have successfully completed their studies at this institution.	2.80	1.43	Moderate
4	My teacher provided me with guidance and encouragement to attend this institution.	2.91	1.23	Moderate
5	To minimize the financial burden on my family by studying at an institution close to home.	3.49	1.32	High
	Average	3.21	0.35	Moderate

According to Table 6, it is obvious that gender exerts an influence on the decision-making process regarding the pursuit of a bachelor's degree in the CEAI at Walailak University**.** While no statistically significant disparities were observed in educational institution ($t = -1.35, p = 0.09$), financial ($t = -1.65, p = 0.06$), or personal reason factors ($t = -0.38, p = 0.35$), a significant difference emerged in the program factor ($t = -3.30, p = 0.002$). Female respondents attributed higher importance to program-related aspects ($M = 4.53, SD = 0.62$) compared to males ($M = 4.19, SD = 0.35$). This analysis underscores that among the examined factors, only the program related considerations exhibited a statistically significant gender-based variation in influencing students' decisions to pursue this course of study.

Table 6. The Results of T-Test for Independent Sample One-Way ANOVA by Gender

Factor	Gender	Mean	*S.D.*	*t*-value	*p*-value	Interpretation
Educational Institution	Male	4.06	0.58	-1.35	0.09	Non-sig
	Female	4.28	1.74			
Finance	Male	3.88	0.21	-1.65	0.06	Non-sig
	Female	4.08	0.07			
Program	Male	4.19	0.35	-3.30	0.002	Sig
	Female	4.53	0.62			
Personal Reason	Male	3.18	0.40	-0.38	0.35	Non-sig
	Female	3.27	0.72			

Based on Table 7, it is apparent that the hometown has a discernible impact on the decision-making process for pursuing a bachelor's degree in the CEAI at Walailak University. However, this effect is not statistically significant at the 0.05 level across educational institutions, financial considerations, curriculum factors, or personal reasons.

Table 7. The Results of T-Test for Independent Sample One-Way ANOVA by Hometown

Factor	Province	Mean	*S.D.*	*t*-value	*p*-value	Interpretation
Educational Institution	Nakhon sri Thammarat	4.29	0.86	1.27	0.10	Non-sig
	Other	4.10	1.24			
Finance	Nakhon sri thammarat	3.90	0.03	0.62	0.27	Non-sig
	Other	3.86	0.06			
Program	Nakhon sri thammarat	4.30	0.73	-0.79	0.21	Non-sig
	Other	4.39	0.42			
Personal Reason	Nakhon sri thammarat	3.42	1.11	1.136	0.14	Non-sig
	Other	3.11	0.37			

Based on Table 8, it is evident that the cumulative GPA at the end of Mathayom 6 exerts an influence on the decision to pursue a bachelor's degree in the CEAI at Walailak University. However, this influence does not reach statistical significance at the 0.05 level concerning educational institutions, financial considerations, curriculum factors, or personal reasons.

Table 8. The Results of T-Test for Independent Sample One-Way ANOVA by GPA

Factor	GPA Range	Mean	*S.D.*	*t*-value	*p*-value	Interpretation
Educational Institution	3.01-3.50	4.11	0.86	0.38	0.35	Non-sig
	Other	4.16	0.88			
Finance	3.01-3.50	3.89	0.08	0.53	0.30	Non-sig
	Other	3.85	0.01			
Program	3.01-3.50	4.31	0.39	0.50	0.31	Non-sig
	Other	4.26	0.51			
Personal Reason	3.01-3.50	3.29	0.48	0.96	0.18	Non-sig
	Other	3.08	0.49			

Based on Table 9, we see that the total monthly income of the family influences the decision to pursue a bachelor's degree in the CEAI at Walailak University. This influence is statistically significant at the 0.05 level, particularly concerning financial considerations.

Table 9. The Results of T-Test for Independent Sample One-Way ANOVA by Household Income

Factor	Income	Mean	*S.D.*	*t*-value	*p*-value	Interpretation
Educational Institution	20,000-30,000	4.10	1.01	-0.27	0.393	Non-sig
	Other	4.14	0.80			
Finance	20,000-30,000	3.97	0.02	2.22	0.02	Sig
	Other	3.82	0.06			
Program	20,000-30,000	4.25	0.42	-0.94	0.18	Non-sig
	Other	4.33	0.43			
Personal Reason	20,000-30,000	3.19	0.59	-0.145	0.444	Non-sig
	Other	3.22	0.51			

Disscusion

This study provides valuable insights into factors that current students consider important in the CEAI program at Walailak University. It is crucial to acknowledge that these findings reflect the perceptions of students who have already enrolled, rather than directly representing factors influencing the initial decision to enroll. Nonetheless, they offer crucial information for improving the program and developing effective admission strategies.

1. Factors Considered Important by Current Students

1.1 Curriculum Factors: Our results indicate that curriculum factors are the most significant consideration for students, aligning with findings from Ammawongchit et al. (2022). The relevance of courses to the job market emerged as the primary concern, followed by the presence of experienced professors. This emphasis reflects the growing demand for graduates who can seamlessly transition into the rapidly evolving fields of CEAI. Specifically, students highly value courses that focus on core AI and machine learning concepts. Popular courses include *Introduction to Artificial Intelligence*, *Machine Learning Fundamentals*, and *Deep Learning for Computer Vision*. The curriculum's emphasis on practical AI applications through courses like *Natural Language Processing* and *Reinforcement Learning* is particularly appreciated. Students also expressed strong interest in interdisciplinary AI courses such as *AI for Robotics* and *AI in Healthcare*, suggesting areas for potential curriculum expansion. The hands-on approach in these courses, including project-based learning and industry internships, was consistently highlighted as a key strength of the program.

1.2 Institutional Factors: The caliber of faculty and staff, modern facilities, and the university's cooperative education system were identified as crucial. These factors underscore the value placed on practical experience and industry connections. A pleasant campus environment also proved significant, highlighting the importance of a conducive learning atmosphere.

1.3 Financial Factors: Financial considerations, particularly dormitory fees and living expenses, were found to be significant student perceptions. This aligns with previous research by Nuansai (2020) and Kenbanpao et al. (2021), emphasizing the importance of financial accessibility in higher education. Walailak University's annual tuition fees for engineering programs (approximately 16,000 THB per semester) are comparable to other public

universities in Thailand. However, its dormitory fees (around 8,000-12,000 THB per semester) are slightly higher than some institutions but lower than private universities. Compared to international standards, Walailak's costs remain relatively affordable. For instance, the average annual cost for computer science programs in the US ranges from $20,000 to $70,000, significantly higher than Walailak's fees.

2. Analysis of Significant Differences

2.1 Gender Disparities: Our analysis revealed significant gender-based differences, particularly concerning curriculum considerations. Interestingly, female students attributed higher importance to program-related aspects (M = 4.53, *SD* = 0.62) compared to male students (M = 4.19, *SD* = 0.35). This finding contrasts with the traditional narrative of male dominance in STEM fields and aligns with recent research showing increasing female interest and engagement in computer science and artificial intelligence (Sax et al., 2017). Despite this higher valuation of curriculum factors by female students, our demographic data still shows a predominance of male students (69.4%) in the program. This persistent gender imbalance reflects a broader trend in engineering disciplines, as noted in the UNESCO Science Report (2021). To understand this paradox, we must examine the social and cultural influences at play. The persistent gender imbalance in engineering education, despite female students' higher valuation of curriculum factors, can be largely attributed to deeply ingrained social and cultural stereotypes. Traditionally, engineering has been perceived as a male-dominated field, with many high school students, both male and female, holding the preconception that engineering is more suitable for men (Cheryan et al., 2017). This stereotype often discourages female students from pursuing engineering degrees, even when they show high interest and aptitude in the subject matter. The disparity between female students' high valuation of the curriculum and their lower enrollment rates suggests that these societal factors are creating significant barriers to entry.

This gender imbalance has important implications for the diversity of the classroom and, subsequently, the workforce. It may lead to a potential loss of diverse perspectives and talents in the field. To address this issue and dismantle these stereotypes, universities must take proactive measures. Walailak University should consider implementing targeted outreach programs for female high school students, highlighting successful female alumni and faculty members as role models. Developing mentorship programs pairing female students with industry professionals can provide crucial support and inspiration. Ensuring gender-inclusive language and representation in program materials is essential to create a welcoming environment. Additionally, the university should investigate and address potential barriers that may be preventing interested female students from enrolling, despite their high valuation of the curriculum. Specifically, promotional materials and recruitment efforts should emphasize that engineering is equally accessible and rewarding for students of all genders. Universities can showcase successful female engineers as role models, highlight the diverse applications of engineering in solving global challenges, and demonstrate how the field benefits from diverse perspectives. By explicitly communicating that female students are not only welcome but essential to the future of engineering, universities can begin to shift societal perceptions and encourage more balanced gender representation in their programs (Dasgupta & Stout, 2014).

These efforts align with global initiatives to increase female participation in STEM fields, as outlined in the OECD report on the Pursuit of Gender Equality (2017). By leveraging female students' high interest in curriculum aspects and actively addressing societal barriers, Walailak University has an opportunity to lead in creating a more gender-balanced program in CEAI, potentially setting a new standard for engineering education in Thailand and beyond.

2.2 Income-Related Differences: Our study also found that the total monthly income of the family influences the decision to pursue a bachelor's degree in CEAI at Walailak

University. This influence is statistically significant at the 0.05 level, particularly concerning financial considerations. This finding aligns with previous research by Nuansai (2020) and Kenbanpao et al. (2021), emphasizing the importance of financial accessibility in higher education. This finding reveals a clear correlation between family income and students' decision-making processes, particularly in how they weigh financial factors. Students from lower-income families (20,000-30,000 THB monthly) placed greater importance on financial support and scholarship opportunities, with a mean score of 3.97 for financial factors compared to 3.82 for students from other income brackets.

The income-related differences have several implications. They may lead to the potential exclusion of talented students from lower-income backgrounds, create a socioeconomic divide in access to high-demand tech education, and possibly limit social mobility through education. Students from lower-income families placed greater importance on financial support and scholarship opportunities, likely due to varying levels of financial pressure and different perceptions of the return on investment in higher education.

To address these disparities, the university should consider expanding need-based scholarship programs, providing transparent information about the long-term financial benefits of the program, offering part-time job opportunities or paid internships to support students financially, and developing partnerships with industry to provide sponsored scholarships. Additionally, collaborating with local schools to provide early exposure to computer science, particularly in lower-income areas, could help level the playing field.

By addressing these gender and income dynamics, Walailak University can work towards creating a more inclusive and diverse environment in its CEAI program. This approach not only benefits individual students but also contributes to the development of a more diverse and innovative tech workforce in Thailand.

3. Implications for Admission Strategies and Outreach

Our findings suggest a comprehensive approach to enhance admission processes, curriculum design, and public relations efforts. For admissions, we recommend curriculum-focused marketing that highlights industry alignment and practical experiences, targeted outreach to address gender imbalance, and clear communication of financial support options. These efforts should emphasize institutional strengths such as faculty quality and modern facilities. To expand our reach, we propose implementing an enhanced public relations strategy. This includes leveraging social media platforms to showcase student success stories and research breakthroughs, creating engaging short-form video content, and utilizing targeted advertising campaigns. Specific outreach programs such as virtual open houses, high school ambassador programs, and summer AI camps can effectively engage potential students from neighboring regions. Collaborating with local industries and regional education offices for workshops and career fairs will further strengthen our presence in target areas.

Curriculum improvements should focus on expanding AI and machine learning offerings, integrating industry projects, and developing flexible specialization tracks. These enhancements should be complemented by soft skills development, courses on the ethics and social impact of AI, and a strengthened internship program. By collaborating with local tech companies and international partners, the program can offer real-world projects and diverse internship opportunities, thereby enhancing students' practical skills and industry connections. This comprehensive approach aims to not only attract a diverse and talented student body but also prepare graduates who are technically proficient, ethically aware, and equipped with the professional skills necessary for success in the rapidly evolving field of AI and computer engineering. Through these strategic initiatives, we aim to enhance the program's visibility, appeal to a broader range of prospective students, and ultimately contribute to the development of a skilled workforce in the AI and computer engineering sectors.

4. Global Context

Our findings reflect broader trends in higher education, particularly in STEM fields. The UNESCO Science Report (2021) highlights a global emphasis on strengthening AI and computer engineering education, aligning with our results on curriculum relevance (Balfaqih & Balfagih, 2024). Austing et al. (1979) found similar emphasis on curriculum content and career prospects in the United States, though with less focus on financial factors. The gender disparity observed in our study is consistent with global trends, as confirmed by the OECD report on the Pursuit of Gender Equality (2017). These results contribute to the ongoing global dialogue on the future of higher education in technology fields, as highlighted in the World Economic Forum's "The Future of Jobs Report 2020."

By focusing on these areas, Walailak University can develop more effective admission strategies that address the diverse needs and concerns of prospective students in the CEAI program. Future research should include prospective students and those who chose not to enroll to gain a more comprehensive understanding of decision-making factors in program selection.

Limitations

This study is limited by its focus on current students only, which prevents direct analysis of factors influencing the decision to enroll in the program. Future research could benefit from including prospective students or those who chose not to enroll, allowing for a more comprehensive understanding of decision-making factors.

Conclusions

This study provides valuable insights into the factors that current students in the Computer Engineering and Artificial Intelligence program at Walailak University consider important in their educational experience, as well as a comparative analysis of these factors among different student groups. The research reveals that curriculum factors, particularly job market relevance and faculty expertise, are of paramount importance to students. This underscores the critical need for maintaining an up-to-date and industry-aligned curriculum in this rapidly evolving field. Institutional factors, such as the university's strong cooperative education system and pleasant campus environment, also play a significant role in shaping students' educational experiences, highlighting the importance of practical, hands-on learning opportunities and a conducive study atmosphere.

The comparative analysis of factors revealed notable disparities among different student groups. Gender differences were observed in the perception of various factors, particularly curriculum aspects, with a higher preference for the program among male students. This finding suggests a need for targeted strategies to attract and support female students in the field of CEAI. Additionally, family income levels were found to significantly influence students' perspectives on the financial aspects of their education, with students from lower-income backgrounds placing greater importance on financial support and scholarship opportunities.

While all students valued curriculum relevance, the study uncovered variations in how different groups prioritized other factors such as institutional reputation and personal reasons. These findings provide crucial information for enhancing the program and developing more effective, targeted admission strategies. By addressing the identified factors and understanding the differences among student groups, Walailak University can improve its curriculum, refine its support services, and better cater to the diverse needs of its student body. It is important to note, however, that this study focused on the perspectives of current students rather than factors influencing initial enrollment decisions. Future research should extend to prospective students and those who chose not to enroll in the program to gain a more comprehensive understanding of decision-making factors in program selection. Such expanded research would provide even more valuable insights for program development and admission strategies.

In conclusion, this study contributes significantly to understanding what current students value in their educational experience in the CEAI program at Walailak University, and how these factors vary among different student groups. This knowledge serves as a solid foundation for the university's ongoing efforts to enhance the program, refine admission strategies, and ultimately better serve the evolving needs of students in this dynamic field.

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References

Ammawongchit, A., Pakdeeronachit, S., & Inchan, N. (2022). Factors affecting admission decision to enroll in the bachelor's degree at College of Social Communication Innovation, Srinakharinwirot University. (In Thai). *Journal of Innovation and Management,* 7(1), 53-68.

Arwae, P., & Paiboon, N. (2020). The decisions on undergraduate studying in Prince of Songkla University, Pattani Campus, Academic year 2019. (In Thai). *Council of University Administrative Staff of Thailand,* 9(2), 22-32.

Austing, R. H., Barnes, B. H., Bonnette, D. T., Engel, G. L., & Stokes, G. (1979). Curriculum'78: recommendations for the undergraduate program in Computer Science—A report of the ACM curriculum committee on Computer Science. *Communications of the ACM, 22*(3), 147-166. https://doi.org/10.1145/359080.359083

Balfaqih, M., & Balfagih, Z. (2024). AI-enhanced engineering education: Customization, adaptive learning, and real-time data analysis. In *AI-enhanced teaching methods* (pp. 108-131). IGI Global. https://doi.org/10.4018/979-8-3693-2728-9.ch005

Boonpit, V., & Mettarikanon, D. (2022). Factors affecting the decision to study in the Digital Content and Media Program, School of Informatics. (In Thai). Walailak University. *Information,* 29(2), 46-57.

Briggs, S. (2006). An exploratory study of the factors influencing undergraduate student choice: The case of higher education in Scotland. *Studies in Higher Education, 31*(6), 705-722. https://doi.org/10.1080/03075070601004333

Chapman, D. W. (1981). A model of student college choice. *The Journal of Higher Education, 52*(5), 490-505. https://doi.org/10.1080/00221546.1981.11778120

Cheryan, S., Ziegler, S. A., Montoya, A. K., & Jiang, L. (2017). Why are some STEM fields more gender balanced than others? *Psychological Bulletin, 143*(1), 1-35. https://doi.org/10.1037/bul0000052

Dasgupta, N., & Stout, J. G. (2014). Girls and women in science, technology, engineering, and mathematics: STEMing the tide and broadening participation in STEM careers. *Policy Insights from the Behavioral and Brain Sciences, 1*(1), 21-29. https://doi.org/10.1177/2372732214549471

Gatebute, P., & Thongpad, S. (2020). Factors affecting the decision to study in the Bachelor of Science Program by first year undergraduate students in the Faculty of Science, Mahidol University. (In Thai). *Journal of Professional Routine to Research,* 7(2), 42-51.

Julakat, S. (2021). Factors affecting the marketing development process of educational institutions. (In Thai). *Journal of the Association of Researchers,* 26(4), 195-210.

Kaewkam, D., & Arpavate, W. (2021). Factors influencing the decision to pursue undergraduate degree of students in Dusit District. (In Thai). *Journal of Mass Communication Technology, RMUTP,* 1(2), 42-49.

Kasemsarn, K. (2014). Factors influencing Bangkok's high school students to study in public universities (In Thai). *Journal of the Faculty of Architecture King Mongkut's Institute of Technology Ladkrabang,* 16(1), 189-202.

Kenbanpao, C., Phupho, N., Klapairee, A., & Suwannasaen, P. (2021). Cluster analysis of students according to factors of decision making to study at Nakhon Ratchasima Rajabhat University. (In Thai). *Science and Technology Research Journal Nakhon Ratchasima Rajabhat University,* 6(2), 10-18.

Khantaku, W., Somudorn, J., & Chinacarawat, N. (2020). Factors affecting the decision to study a bachelor degree in Suranaree University of Technology, Academic year 2020. (In Thai). *Journal of Modern Learning Development,* 5(4), 28-39.

Kongsumruay, K., & Buasook, P. (2022). The study of factors affecting decision to study in English major of undergraduate students at Mahamakut Buddhist University Isan Campus. (In Thai). *Journal of Srilanchang Review,* 8(2), 75-90.

Mitsanthia, S., Arthivichai, S., & Somnam, S. (2020). Factors affecting students decision to study Faculty of Education in Chaiyaphum Rajabhat University. (In Thai). *Research and Development Institute Journal of Chaiyaphum Rajabhat University,* 2(1), 53-62.

Nuansai, P. (2020). A study of factors affecting the decision to study in Schools Vocational Education Srisaket Province (In Thai). *Buabundit Journal of Educational Administration,* 20(1), 49-60.

OECD. (2017). *The pursuit of gender equality: An uphill battle*. OECD Publishing. https://doi.org/10.1787/9789264281318-en

Phetcharat, K. (2020). Factors associated with decision to study of bachelor degree among undergraduate students in Thaksin University, Phatthalung Campus. (In Thai). *Council of University Administrative Staff of Thailand,* 9(2), 194-205.

Promsen, C., Khrutpan, W., & Shiangjen, K. (2022). Opinion toward factors affecting admission waiving decision for undergraduate level at University of Phayao academic year of 2022. (In Thai). *Journal of Liberal Art of Rajamangala University of Technology Suvarnabhumi,* 4(3), 534-544.

Sax, L. J., Lehman, K. J., Jacobs, J. A., Kanny, M. A., Lim, G., Monje-Paulson, L., & Zimmerman, H. B. (2017). Anatomy of an enduring gender gap: The evolution of women's participation in computer science. *The Journal of Higher Education, 88*(2), 258-293. https://doi.org/10.1080/00221546.2016.1257306

Sorat, P., Amnuaypornlert, N., & Shiangjen, K. (2022). Opinion levels toward decision factors for acceptance to undergraduate study at University of Phayao in an academic year of 2022. (In Thai). *Journal of Liberal Art of Rajamangala University of Technology Suvarnabhumi,* 4(3), 499-511.

Srisontisuk, S., Buasri, M., Wanong, P., & Sengonkeo, P. (2020). Factors affecting the decision on bachelor degree study at Khon Kaen University of the students through the Thai University Central Admission System (TCAS System), in the academic year 2019. (In Thai). *School of Administrative Studies Academic Journal,* 3(3), 33-47.

Suwaphanich, A. (2022). Factor affecting students decision to continue undergraduate study at Maejo University (In Thai). *Journal of Humanities and Social Sciences Nakhon Pathom Rajabhat University,* 12(2), 1-17.

Tirakoat, S., Youngmee, K., Nimpisan, M., Phisittaphong, P., & Suwannako, P. (2021). Comparison of factors affecting the decision to study undergraduate programs in the field of Informatics. (In Thai). *Journal of Applied Informatics and Technology,* 3(2), 122-135.

UNESCO. (2021). *UNESCO science report: The race against time for smarter development*. UNESCO Publishing.

Yafu, S. (2021). Factors influencing the decision to study at the graduate level of students in the Faculty of Education, Nakhon Sawan Rajabhat University (In Thai). *SSRU Academic Journal of Education,* 5(2), 25-31.