A Study of Career Maturity, Information-Seeking Behavior, Entrepreneurial Efficacy, Problem-Solving Skills, and Managerial Skills of Undergraduate Students in Thailand

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Abstract—**Nowadays, in addition to the hard skills like academic knowledge of new graduates, other soft skills of management such as Career Maturity (CM), Information-Seeking Behavior (ISB), Entrepreneurial Efficacy (EE), Problem-Solving Skills (PSS), and Managerial Skills (MS) are also required by the company owner as they will be useful in real-life work management. The objectives of this study are: 1) to investigate the current competencies of CM, ISB, EE, PSS, and MS of undergraduate students in Thailand, 2) to investigate the different competencies of CM, ISB, EE, PSS, and MS across different gender, faculties, and grade levels. This study uses an online questionnaire to collect data from 569 undergraduate students from Thailand. The result shows that the reliability of the data collecting tool is acceptable (Cronbach's alpha was at 0.87) and the current findings further reveal that the total competencies of CM, ISB, and MS are different by gender but on the other way, total competencies of all 5 which means to CM, ISB, EE, PSS, and MS are different by faculties and grade levels. The information from this study can make instructors or teachers develop a modern classroom that can increase competitiveness for undergraduate students and prepare them to be qualified to apply for future employment.**

Keywords—**Career Maturity (CM), Information-Seeking Behavior (ISB), Entrepreneurial Efficacy (EE), Problem-Solving Skills (PSS), Managerial Skills (MS), undergraduate student**

I. INTRODUCTION

A good quality of education can increase the opportunity of getting employment for undergraduate students [1]. Since 2015, many famous companies or business organizations in Thailand need to employ new graduates with high academic knowledge and high GPAX only, but now in 2022, the world's trend has changed, company owners expect more than GPAX but still need more soft skills and transformational skills, e.g., career maturity, information-seeking behavior, entrepreneurial efficacy, problem-solving skills, managerial skills, etc. which can enhance people potential skills while they have to solve the problem in their workplace or daily life [2].

Thailand is one of the countries that recognize the importance of developing learners' competency through the 21st-century policy which can refer to learning skills, literacy skills, and life skills [3]. So, teachers or lecturers in universities try to enhance the competency of CM, ISB, EE, PSS, and MS for undergraduate students from freshman to senior year because if they can develop their potential in these skills, they will have tools to apply their daily life or even in their work life, too [4]. Therefore, universities should concern about how to improve and develop their class by inserting the content of 21st-century skills for undergraduate students to study and practice these skills while they can try before going to work at a real company after they graduate. If undergraduate students can increase their competencies like CM, ISB, EE, PSS, and MS, they may also have an opportunity to have a good career and may have a good quality of life in the future [5]. Moreover, these soft skills and transformational skills may also allow an organization to succeed in business [6].

Therefore, the current study focuses on investigating the current competencies of Career Maturity (CM), Information-Seeking Behavior (ISB), Entrepreneurial Efficacy (EE), Problem-Solving Skills (PSS), and Managerial Skills (MS) of undergraduate students in different contexts, different following by gender, faculties, and grade levels. Researchers expect that the results of this study can be used for teachers, lecturers, or people who want to develop, organize and design teaching and learning activities about self-management which consist of CM, ISB, EE, PSS, and MS. In addition, the results from this study may be used to design a new learning framework to increase competitiveness for undergraduate

students and prepare them to be qualified to apply for future employment, too.

II. LITERATURE REVIEW

Nowadays, if people need to find any information for a reason, they need to have a good skill of Information-Seeking Behavior (ISB) which can make them find many approaches to solve their life or work problems effectively. Information-seeking behavior can refer to the purposive seeking for information as a consequence of a need to complete some goal [7] which is a good basis for self-improvement and self-management.

The important soft skills for self-improvement and self-management are Problem-Solving Skills (PS) and Managerial Skills (MS) which can be applied to solve and manage problems in daily life [8]. Problem-Solving Skills (PS) can be explained as skills that are used to solve problems in different situations, it is the "effort needed in achieving a goal or finding a solution when no automatic solution is available" [9] which PS is one of an important part that enhances a potential of Managerial Skills (MS) which can refer to a set of qualities and attributes in the personality of the managers that enable them to effectively manage the entire organization [10]. Normally, managers or people who are in charge of the department, company, or another business unit will use to contribute and develop their team or each person in the company. If we applied these skills to the teaching part, MS can be explained as the way teachers deal with, enhance, and develop learners' competencies and potentials while they were in their classes [11].

In addition to ISB, PS, and MS, many executives from leading business organizations also need new graduates to have skills of Career Maturity (CM), which can refer to abilities to complete career development tasks, which is one of the basis for problem-solving skills and managerial skills, too [12]. So, CM is interesting to this study because students can use these skills with self-confidence to choose whatever career they want to pursue by themselves which may lead to career success in the future [13]. And another skill is Entrepreneurial Efficacy (EE) which means the self-confidence intensity of entrepreneurs on whether their entrepreneurial skills can complete various entrepreneurial activities, reflecting the belief that entrepreneurs are equipped with the competency to influence their surroundings and succeed through corresponding actions [14] to make sure that undergraduate students will understand basic of business and have an entrepreneurial mindset to keep overall benefit for their company [15].

III. RESEARCH METHODOLOGY

In this study, researchers develop a questionnaire to survey the competency of CM, ISB, EE, PSS, and MS for undergraduate students in Thailand and test the content validity (IOC: Index of Item-Objective Congruence method) by three experts of management and education

side. Researchers select 569 undergraduate students from Thailand to participate in the questionnaire.

A. Participants

The study uses convenience sampling with undergraduate students in Thailand. Nowadays, Thailand has a total number of 1,451,157 undergraduate students [16], with 579,992 males (39.97%) and 871,165 females (60.03%). The current sample of this study includes 569 undergraduate students from Thailand in 2022.

The number of participants separated by gender is shown in Table I, by faculty in Table II, and by grade level in Table III.

TABLE I. FREQUENCY OF SAMPLES SEPARATED BY GENDER

Gender	N	Percent
Male	233	40.9
Female	261	45.9
Other	75	13.2
Total	569	100.0

This study comprises 233 males (40.9%), 261 females (45.9%), and 75 other genders (13.2%).

TABLE II. FREQUENCY OF SAMPLES SEPARATED BY FACULTY

Faculty	N	Percent
Science	206	36.2
Education	217	38.1
Management	146	25.7
Total	569	100.0

There are three faculties including 206 participants from the Faculty of Science (36.2%), 217 participants from the Faculty of Education (38.1%), and 146 participants from the Faculty of Management (25.7%).

TABLE III. FREQUENCY OF SAMPLES SEPARATED BY GRADE LEVEL

Grade Level	N	Percent
Freshman	215	37.8
Sophomore	160	28.1
Junior	117	20.6
Senior	77	13.5
Total	569	100.0

The participants are undergraduate students from freshmen to seniors, which there are 215 freshmen (37.8%), 160 sophomores (28.1%), 117 juniors (20.6%), and 77 seniors (13.5%).

B. Procedures

The study is authorized by the university under the code of research ethics. Participants are given a detailed explanation of the study aims and techniques for administering the questionnaire. The questionnaire does not identify any personal information and keeps the study confidential. There are also no questions that have an emotional impact on the respondents.

C. Data Analysis

To investigate data distribution from participants, researchers use descriptive statistics for example, frequency and percentage to provide general information i.e., gender, faculties, and grade levels of respondents, as well as quantitative analyses such as mean and standard deviation. The one-way analysis of variance (ANOVA) is also used to compare the mean of three or more groups to test competency levels, on currents and needs. The reliability of this study questionnaire is tested and the value of Cronbach's alpha is more than 0.7 which means they are acceptable [17]. Construct in this pilot study consists of five groups of factors, which Cronbach's alpha presented as acceptable ($\alpha = 0.87$).

D. Questionnaire

The procedures for developing the questionnaire for this study are as follows:
(1) Created factors for the questionnaire based on related literature about career maturity, information-seeking behavior, entrepreneurial efficacy, problem-solving skills, and managerial skills.
(2) Assessed the content validity of the questionnaire (IOC: Index of Item-Objective Congruence method) by three experts on the education and management side. The result of assessing finds that each item's IOC index ranges from 0.67 to 1.00 which is acceptable.
(3) This questionnaire is conducted to verify the appropriateness of language using the back translation method by 2 bilingual experts.

As a result, this questionnaire is used to gather information from undergraduate students in Thailand. The questionnaire is divided into six sections:
Part 1: Participant's general information
Part 2: Career Maturity (14 items)
Part 3: Information-Seeking Behavior (15 items)
Part 4: Entrepreneurial Efficacy (11 items)
Part 5: Problem-Solving Skills (8 items)
Part 6: Managerial Skills (16 items)
In parts 2 to 6, participants could respond questionnaire using 5 points Likert-type scale followed by 1 means strongly disagree, 2 means disagree, 3 means neutral, 4 means agree, and 5 means strongly agree.

IV. RESULTS

To analyze data from participants, researchers identify criteria for interpreting which can be followed:
4.51–5.00 means conformity is the highest
3.51–4.50 means conformity is high
2.51–3.50 means conformity is medium
1.51–2.50 means conformity is low
1.00–1.50 means conformity is the lowest
Researchers analyze data by the SPSS program and Table IV presents the average mean value, minimum-maximum of average mean value, standard deviation, and meaning of each competency level.

TABLE IV. CURRENT COMPETENCIES OF CM, ISB, EE, PSS, AND MS OF UNDERGRADUATE STUDENTS IN THAILAND

Factor	Mean	Min	Max	S.D.	Meaning
CM	4.04	3.57	4.57	0.19	High
ISB	4.01	3.53	4.60	0.22	High
EE	3.85	3.00	4.82	0.34	High
PSS	3.62	3.00	4.50	0.31	High
MS	4.22	3.69	4.81	0.21	High

From the information in Table IV, the current competency level of five factors in this questionnaire (CM, ISB, EE, PSS, and MS) are at high levels ($\bar{x} = 4.04$, S.D. = 0.19, $\bar{x} = 4.01$, S.D. = 0.22, $\bar{x} = 3.85$, S.D. = 0.34, $\bar{x} = 3.62$, S.D. = 0.31, and $\bar{x} = 4.22$, S.D. = 0.21, respectively). The range of minimum to maximum average mean value of each factor is 3.00–4.82 (CM is 3.57–4.57, ISB is 3.53–4.60, EE is 3.00–4.82, PSS is 3.00–4.50, and MS is 3.69–4.81).

To find the differences in gender on current competencies of CM, ISB, EE, PSS, and MS, researchers have found the answer and the findings reveal that there are significantly different levels of 4 types of competency across gender followed by CM ($F_{(2, 566)} = 29.38$, $p < 0.01$), ISB ($F_{(2, 566)} = 8.75$, $p < 0.01$), EE ($F_{(2, 566)} = 39.91$, $p < 0.01$), and MS ($F_{(2, 566)} = 3.99$, $p < 0.05$). The total result of different gender analyses found that there is a significant difference in different gender at a confidence level of 0.01. The additional information on the differences in gender on current competencies of CM, ISB, EE, and MS is shown in Table V.

TABLE V. THE DIFFERENCES OF GENDER ON CURRENT COMPETENCIES OF CM, ISB, EE, AND MS

Factor	Variance	SS	df	MS	F-ratio
CM	Between Groups	1.93	2	0.97	29.38**
	Within Groups	18.60	566	0.03	
	Total	20.53	568		
ISB	Between Groups	0.84	2	0.42	8.75**
	Within Groups	27.24	566	0.05	
	Total	28.08	568		
EE	Between Groups	8.30	2	4.15	39.91**
	Within Groups	58.86	566	0.10	
	Total	67.16	568		
MS	Between Groups	0.35	2	0.18	3.99*
	Within Groups	24.97	566	0.04	
	Total	25.32	568		

Note(s): ** $p < 0.01$, * $p < 0.05$

Table VI, to consider CM, ISB, EE, and MS across gender by a Post Hoc test, researchers finds that in CM, the female has a significant difference in the mean value of competency levels which is higher than male. Also, the other gender (LGBTQ+) has a significant difference in the mean value of competency levels which is higher than females and males, too. Part, ISB, EE, and MS, another gender (LGBTQ+) has a significant difference in the mean value of competency levels which is higher than female and male.

TABLE VI. MEAN DIFFERENCES COMPARING WITH EACH GENDER
(LSD: POST HOC TEST)

Factor	Gender	$\bar{x}$	Male	Female	Others
CM	Male	3.98			
	Female	4.06	0.09*		
	Others	4.15	0.17*	0.08*	
ISB	Male	3.98			
	Female	4.01			
	Others	4.10	0.12*	0.09*	
EE	Male	3.78			
	Female	3.82			
	Others	4.16	0.37*	0.34*	
MS	Male	4.21			
	Female	4.25			
	Others	4.29	0.07*	0.08*	

Note(s): *$p < 0.05$

To find the differences in faculties on current competencies of CM, ISB, EE, PSS, and MS, researchers use one-way ANOVA to find out the answer. The result shows that all 5 factors are significantly different levels of competency across faculties followed by CM (F (2, 566) = 31.20, $p < 0.01$), ISB (F (2, 566) = 4.28, $p < 0.01$), EE (F (2, 566) = 103.58, $p < 0.01$), PSS (F (2, 565) = 100.46, $p < 0.01$), and MS (F (2, 566) = 99.82, $p < 0.01$). The total result of different faculties analysis finds that there is a significant difference in different faculties at a confidence level of 0.01. The additional information on the differences in faculties on current competencies of CM, ISB, EE, PSS, and MS is shown in Table VII.

TABLE VII. THE DIFFERENCES OF FACULTIES ON CURRENT
COMPETENCIES OF CM, ISB, EE, PSS, AND MS

Factor	Variance	SS	df	MS	F-ratio
CM	Between Groups	2.04	2	1.02	31.20**
	Within Groups	18.49	566	0.03	
	Total	20.526	568		
ISB	Between Groups	0.42	2	0.21	4.28**
	Within Groups	27.66	566	0.05	
	Total	28.08	568		
EE	Between Groups	17.99	2	8.99	103.58**
	Within Groups	49.17	566	0.09	
	Total	67.16	568		
PSS	Between Groups	14.02	2	7.00	100.46**
	Within Groups	39.42	565	0.07	
	Total	53.44	567		
MS	Between Groups	6.60	2	3.30	99.82**
	Within Groups	18.72	566	0.03	
	Total	25.32	568	1.02	

Note(s): ** $p < 0.01$

Table VIII, to consider CM, ISB, EE, PSS, and MS across faculties by a Post Hoc test, researchers find that in CM and EE, the Faculty of Management has a significant difference in the mean value of competency levels higher than the Faculty of Science and Education. Part ISB, the Faculty of Science has a significant difference in the mean value of competency levels higher than the Faculty of

Education and Management. Part PSS and MS, the Faculty of Science has a significant difference in the mean value of competency levels higher than the Faculty of Education, and the Faculty of Management has a significant difference in the mean value of competency levels higher than the Faculty of Science and Education.

TABLE VIII. MEAN DIFFERENCES COMPARING WITH EACH FACULTY
(LSD: POST HOC TEST)

Factor	Faculty	$\bar{x}$	S	E	M
CM	S	3.99			
	E	4.01			
	M	4.14	0.15*	0.13*	
ISB	S	4.04		0.05*	0.07*
	E	4.00			
	M	3.98			
EE	S	3.75			
	E	3.74			
	M	4.15	0.40*	0.41*	
PSS	S	3.61		0.14*	
	E	3.47			
	M	3.87	0.26*	0.40*	
MS	S	4.23		0.12*	
	E	4.11			
	M	4.39	0.16*	0.27*	

Note(s): *$p < 0.05$ (S = Faculty of Science, E = Faculty of Education, and M = Faculty of Management)

To find the differences in grade levels on current competencies of CM, ISB, EE, PSS, and MS, the result shows that all 5 factors were significantly different levels of competency across grade levels followed by CM (F (3, 565) = 2.69, $p < 0.05$), ISB (F (3, 565) = 23.56, $p < 0.01$), EE (F (3, 565) = 16.80, $p < 0.01$), PSS (F (3, 564) = 7.01, $p < 0.01$), and MS (F (3, 565) = 14.81, $p < 0.01$). The total result of different grade levels analysis finds that there was a significant difference in different grade levels at a confidence level of 0.01. The additional information on the differences in grade levels on current competencies of CM, ISB, EE, PSS, and MS is shown in Table IX.

TABLE IX. THE DIFFERENCES OF GRADE LEVELS ON CURRENT
COMPETENCIES OF CM, ISB, EE, PSS, AND MS

Factor	Variance	SS	df	MS	F-ratio
CM	Between Groups	0.29	3	0.09	2.69*
	Within Groups	20.23	565	0.04	
	Total	20.53	568		
ISB	Between Groups	3.12	3	1.04	23.56**
	Within Groups	24.96	565	0.04	
	Total	28.08	568		
EE	Between Groups	5.50	3	1.83	16.80**
	Within Groups	61.66	565	0.11	
	Total	67.16	568		
PSS	Between Groups	1.92	3	0.64	7.01**
	Within Groups	51.52	564	0.09	
	Total	53.44	567		
MS	Between Groups	1.85	3	0.62	14.81**
	Within Groups	23.47	565	0.04	
	Total	25.32	568	0.09	

Note(s): ** $p < 0.01$, *$p < 0.05$

Table X, to consider CM, ISB, EE, PSS, and MS across grade levels by a Post Hoc test, researchers find that in CM, the sophomore has a significant difference in the mean value of competency levels higher than junior. Part ISB, the sophomore, and junior have a significant difference in the mean value of competency levels higher than freshman, and the senior has a significant difference in the highest mean value of competency levels. Part EE, the junior has a significant difference in the mean value of competency levels higher than the freshman, and the senior has a significant difference in the highest mean value of competency levels. Part PSS and MS, the sophomore, junior, and senior have a significant difference in the mean value of competency levels higher than a freshman.

TABLE X. MEAN DIFFERENCES COMPARING WITH EACH GRADE LEVEL (LSD: POST HOC TEST)

Factor	Grade Level	$\bar{x}$	1st	2nd	3rd	4th
CM	1st	4.03				
	2nd	4.07			0.06*	
	3rd	4.01				
	4th	4.04				
ISB	1st	3.94				
	2nd	4.01	0.06*			
	3rd	4.02	0.08*			
	4th	4.18	0.23*	0.17*	0.15*	
EE	1st	3.76				
	2nd	3.83				
	3rd	3.89	0.12*			
	4th	4.07	0.30*	0.24*	0.18*	
PSS	1st	3.55				
	2nd	3.66	0.10*			
	3rd	3.65	0.10*			
	4th	3.71	0.16*			
MS	1st	4.16				
	2nd	4.23	0.07*			
	3rd	4.28	0.13*	0.05*		
	4th	4.30	0.15*	0.07*		

Note(s): *$p < 0.05$ (1st = Freshman, 2nd = Sophomore, 3rd = Junior, and 4th = Senior)

V. DISCUSSION

The result from this study found that undergraduate students from Thailand have high competency levels of CM, ISB, EE, PSS, and MS which is in the range of 3.62–4.22. If undergraduate students have high competency levels, which may increase their opportunity to have a good job and high salary in a good company, too [18]. However, if we consider questions about their future life planning, researchers find that each item's mean value is still lower than the mean value of questions about technology use or communication skills. From the above information, it can be explained that undergraduate students in this generation may learn a lot of techniques or much new knowledge from new technologies, social media, and online courses, which makes them have to develop more technology and communication skills to survive in this new trend [19]. Although nowadays, undergraduate students have studied many things online which is free, useful, and convenient, the know-how of future life planning is something to practice and learn by

doing [20], so it would be great if we could incorporate these future life planning tools into the lessons to give undergraduate students have more opportunities to practice before they graduate.

After analyzing data, researchers find that undergraduate students from different genders, faculties, and grade levels have different competency levels of CM, ISB, EE, PSS, and MS. Almost female and others (LGBTQ+) has a significant difference in the mean value of competency levels that is higher than male, which can be explained by their genders that have more planning skill, thoughtful, and sensitive than male [21]. In the same way, undergraduate students from the Faculty of Management have more competency in CM, EE, PSS, and MS than students from the Faculty of Science and Education, which can be explained by knowledge of management courses that cultivate students to develop skills in recognizing what should be done when a problem arises. They also develop skills in managing their life to achieve their life goals [22].

VI. CONCLUSION

According to the study results, the researchers can conclude that the competency levels of CM, ISB, EE, PSS, and MS mostly relied on each gender, faculties, or even grade level. This is interesting that the government's policy still has the same old teaching approach which means most instructors have mostly relied on lectures even nowadays we have to do online learning much more than onsite classes, this traditional teaching may not be very appropriate for undergraduate students. This traditional way of teaching makes students have to learn by memorizing and taking a textbook proficiency test so when they have to use that knowledge in real life or their work life, they rarely adapt that knowledge to their real-life problems because the things that they have known mostly from their textbooks but have no effective tools use to adapt to solve a real-life situation. So, instructors should develop, organize and design teaching and learning activities for undergraduate students to improve their competency levels of CM, ISB, EE, PSS, and MS to increase their competitiveness and qualify to apply for future employment also meet the government's objective of 21st-century education that will be a more sustainable way of learning.

VII. LIMITATION

In this study, a small number of convenient randomized samples are used to collect data. This may cause inaccurate statistical references to the majority of the population. In addition, the number of students in each grade year is not the same. The next research should collect more data from undergraduate students in Thailand at least tenfold of all variables in a questionnaire which should be more than 650 participants.

CONFLICT OF INTEREST

The authors declare no conflict of interest.

AUTHOR CONTRIBUTIONS

Kanjana Tayaborworn was the key author who carried out the current study of designing and developing the questionnaire, collecting and analyzing data, then also wrote the current article. Surachai Suksakulchai was responsible for reviewing the research's direction and authorizing the final version of the paper. All authors had approved the final version.

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