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A PILOT STUDY OF CAREER MATURITY, PROBLEM SOLVING, AND MANAGERIAL SKILLS OF UNDERGRADUATE STUDENTS IN DIFFERENCE CONTEXTS

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Abstract

Nowadays, in addition to the academic knowledge of new graduates, competency of career maturity (CM), problem-solving skills (PS), and managerial skills (MS) were also required by the company owner or business organization as they will be useful in real-life work management, too. This pilot study aimed to 1) investigate the current competencies of CM, PS, and MS of undergraduate students, 2) compare current competencies of CM, PS, and MS across different gender and faculties, and 3) compare the differences in grade levels on current competencies of

CM, PS, and MS of undergraduate students. The sample of this pilot study included 164 undergraduate students from Thailand. The online questionnaire was used to collect data from undergraduate students and the reliability of this pilot study was acceptable. The current findings further revealed that some competencies of CM, PS, and MS were different by gender and grade levels which makes instructors or teachers should develop a modern classroom that can increase competitiveness for students and prepares students to be qualified to apply for future employment.

Keywords

Career Maturity (CM), Managerial Skills (MS), Problem Solving Skills (PS), Thailand, Undergraduate Student

1. Introduction

A good quality of education is one of the essential factors of human development, it increases the opportunity of getting employment for high-achieving students, too. (Jamaludin, R., McKAY, E. and Ledger, S., 2020) Many years ago, company owners or business organizations in Thailand need to an employed new graduates with high academic knowledge and high GPAX only but now the world's trend was changed their mindset, they need more than academic knowledge or GPAX but still need transformation skills e.g. problem-solving skills, career maturity, managerial skills, etc. which can enhance work potential of people while they have to face with a real immediate problem in their workplace. (Arifin, I., and Hermino, A., 2017) Moreover, these skills may also give an organization the opportunity to succeed in business, too. (Ismail, M. R., and Zakaria, Z., 2018)

Thailand is one of a country that recognizes the importance of developing competency of career maturity, problem-solving skills, and managerial skills for students from freshman to senior year because if students can develop their potential in these skills, they will have tools to apply in their work life. It also can be an opportunity for students to have a good career and may have a good quality of life in the future. (Ross, C. E., and Van Willigen, M., 1997) Therefore, educational institutions especially universities should offer many problem solving and managerial courses to junior and seniors related to the development of management skills for them to learn and practice these skills while they can try before going to work at a real company after they graduate.

Therefore, the current study focuses on investigating the current competencies of CM, PS, and MS of undergraduate students of different gender, grade levels, and faculties. The results of

this pilot study would use for teachers or people who want to develop, organize and design teaching and learning activities about self-management which consist of CM, PS, and MS. In addition, it can use pilot information to increase competitiveness for students and prepares students to be qualified to apply for future employment.

2. Literature Review

The important basic skills for self-management for students are problem-solving skills(PS) and managerial skills(MS) which students can be applied to solve and manage their problems in daily life. (Gültekin, S. B., and Altun, T., 2022) 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" (Gok, T., 2012) which PS is one of an important part that enhances a potential of managerial skills(MS) which can refer to set of qualities and attributes in the personality of the managers that enable them to effectively manage the entire organization. (Mayuga, G. P., 2022) 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 class. (Silva, M. H., 2021)

In addition to PS and MS which are the basic skills of self-management, modern company owners or business organizations still expect new graduates to have a competency of Career Maturity(CM) can be referred to as "multidimensional process and progress speed in the career choice path" (Super, D. E., and Jordaan, J. P., 1973) Moreover, MS still can be defined as abilities to completing career development tasks which is one of the roots of developing problem-solving skills and coping strategies for addressing the difficulties experienced in making a career choice. (Hazel, D. U. R. U., 2022) So, CM is interesting to explore because students who have this competence can use this with self-confidence to choose whatever career they want to pursue by themselves with self-confidence which may lead to career success in the future. (Qihong, C., Yanru, W., and Xiaojing, L., 2022) On the other hand, even though the current undergraduate students in Thailand have perceived each type of transformational skill such as CM, MS, or PS (Chaiyama, N., and Kaewpila, N., 2022) but there has no researcher has investigated all CM, MS, and PS together so, researcher see the interesting for this gap of a problem and decided to do this

pilot study and use the result for initial information to improve these 3 competencies in undergraduate students in Thailand.

3. Research Objectives

The objectives of this pilot study are to:

1. Investigate current competencies of career maturity, problem-solving skills, and managerial skills of undergraduate students.
2. Compare current competencies of career maturity, problem-solving skills, and managerial skills of undergraduate students across gender, grade levels, and faculties.

4. Research Methodology

In this pilot study, researchers had developed the questionnaire for surveyed competencies of CM, PS, and MS then test the content validity (IOC: Index of Item-Objective Congruence method) by 3 experts and selected 164 undergraduate students from Thailand to participated the questionnaire.

4.1 Participants

The current sample of this pilot study included 164 undergraduate students from Thailand in 2022, Table 1 shows this pilot study have comprising with 72 males (43.9%) and 92 females (56.1%). Participants were students from freshmen to seniors which can explain by there were 41 freshmen (25%), 42 sophomores (25.6%), 35 juniors (21.3%), and 46 seniors (28%). There were 4 levels of GPAX from participants followed by 30 students who were in the range of 2.00 - 2.49 (18.3%), 49 students in 2.50-2.99 (29.9%), 37 students in 3.00-3.49 (22.6%), and 48 students were in the range of equal or more than 3.5 (29.3%). In this pilot study, participants were from 2 faculties which can explain including 76 students from the faculty of Science (46.3%), and 88 students from the faculty of Education (53.7%)

Table 1: *Frequency of samples separated by gender, grade levels, GPAX and faculties*

Items		%
1. Gender	Frequency	
male	72	43.9
female	92	56.1
Total	164	100.0
2. Grade Levels		
freshman	41	25.0

sophomore	42	25.6
junior	35	21.3
senior	46	28.0
Total	164	100.0
3. GPAX		
2.00 - 2.49	30	18.3
2.50 - 2.99	49	29.9
3.00 - 3.49	37	22.6
>= 3.50	48	29.3
Total	164	100.0
4. Faculties		
Science	76	46.3
Education	88	53.7
Total	164	100.0

(Source: A survey of CM, PS, and MS of undergraduate students in Thailand)

4.2. Procedures

The study was authorized by the university under the code of research ethics. Participants were given a detailed explanation of the study aims and techniques for administering the questionnaire. The questionnaire did not identify any personal information and kept the study confidential. There were also no questions that had an emotional impact on the respondents.

4.3. Data Analysis

To investigate data distribution from participants, the researcher had used descriptive statistics, for example, frequency and percentage to provide general information i.e. gender, grade levels, and faculties of respondents, as well as quantitative analyses such as mean and standard deviation. The t-test is used to determine if two samples are different by comparing their differences. The one-way analysis of variance (ANOVA) was also used to compare the mean of three or more groups to test class levels, currents, and needs. The reliability of this pilot study questionnaire was tested and the value of Cronbach's alpha is more than 0.7 which means they were acceptable. (Bonett, D. G., and Wright, T. A., 2015) Construct in this pilot study were consisted of three items, which Cronbach's alpha presented as acceptable ($\alpha = 0.797$)

4.4. Questionnaire

The procedures for developing this pilot study questionnaire are as follows:

1. Created a questionnaire based on related literature about career maturity, problem solving skills, and managerial skills.

2. Three experts assessed the content validity of the questionnaire (IOC: Index of Item-Objective Congruence method). Each item's IOC index ranges from 0.67 to 1.00.
3. This questionnaire was conducted to verify the appropriateness of language using back translation method by 2 bilingual experts.

As a result, this questionnaire may be used to gather information. The questionnaire is divided into four sections:

Part 1: Participant's general information

Part 2: Career Maturity (14 questions)

Part 3: Problem Solving Skills (8 questions)

Part 4: Managerial Skills (16 questions)

In parts 2 to 4, participants could respond questionnaire using 5 points Likert-type scale following by 1 means strongly disagrees, 2 means disagree, 3 means neutral, 4 means agree, and 5 means strongly agrees.

5. Results

Current competencies of career maturity (CM), problem solving skills (PS), and managerial skills (MS) of undergraduate students

The analysis results of current competencies of career maturity, problem solving skills, and managerial skills of undergraduate students. In this pilot study, researcher has identified criteria for interpreting which can be following by:

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

After distributing the online questionnaire to the respondents via a google form, there are 164 undergraduate students from Thailand responded to this questionnaire. Researchers used those online raw data to analyze the results of this pilot study by the SPSS program. The analysis results of current competencies of career maturity, problem-solving skills, and managerial skills of undergraduate students can be shown in Table 2

Table 2: *The analysis results of current competencies of career maturity, problem-solving skills, and managerial skills of undergraduate students*

Items	Mean	S.D.	Meaning
Career Maturity (CM)	4.20	.30	High
Problem Solving Skills (PS)	4.08	.34	High
Managerial Skills (MS)	4.21	.24	High

(Source: A survey of CM, PS, and MS of undergraduate students in Thailand)

From information Table 2, there were three sections of questionnaire, CM, PS, and MS were at high levels ($\bar{x} = 4.20$, S.D. = 0.30, $\bar{x} = 4.08$, S.D. = 0.34, and $\bar{x} = 4.21$, S.D. = 0.24 respectively). The item “I want an occupation with short working hours and a good working environment” and “I plan to complete a project on time” is the highest average same score ($\bar{x} = 4.96$, S.D. = 0.19), and the item “I search for new strategies of communicating with their external and internal publics” received the lowest average score ($\bar{x} = 3.56$, S.D. = 0.57)

5.2 Comparison results on current competencies of CM, PS, and MS across different gender and faculties by Independent-Samples T-test and different grade levels by One-way ANOVA.

Pertaining to analyzing the differences in gender in CM, PS, and MS, the present results revealed that there were differences in gender in CM, PS, and MS in six items following by 1) In order to obtain the occupation I want, I need to plan ahead, 2) When I read the newspaper, I read articles about successful people working in my field of interest, 3) When choosing an occupation, I consider promotion opportunities instead of job characteristics, 4) I am confident that I will be able to work as well as anyone working in my chosen occupation, 5) I empower to see what goes on in working environment, and 6) I easily get along with people. On the other hand, the total result of CM, PS, and MS has shown that gender was not significantly different at a confidence level of .05 and the additional information can show in Table 3 and Table 4

Table 3: *The differences in gender on current competencies of career maturity, problem-solving skills, and managerial skills*

Items	Gender	F	t	df	Sig.
In order to obtain the occupation I want, I need to plan ahead	Male	1.25	-4.66	162	.00
	Female		-4.61	146.34	.00
When I read the newspaper, I read articles about successful people working in my field of interest	Male	6.34	-3.98	162	.00
	Female		-3.91	139.93	.00
When choosing an occupation, I consider promotion opportunities instead of job characteristics	Male	4.24	-4.79	162	.00
	Female		-4.56	115.19	.00
	Male	7.34	2.04	162	.043

I am confident that I will be able to work as well as anyone working in my chosen occupation	Female		2.01	144.07	.046
I empower to see what goes on in working environment	Male	75.45	-6.12	162	.00
	Female		-5.64	93.52	.00
I easily get along with people	Male	.093	3.88	162	.00
	Female		3.89	153.07	.00
Total	Male	.23	-1.28	162	.204
	Female		-1.26	145.80	.209

p<0.05 (Source: A survey of CM, PS, and MS of undergraduate students in Thailand)

Table 4: Descriptive statistics of items differing for gender

Items	Male		Female	
	M	S.D.	M	S.D.
In order to obtain the occupation I want, I need to plan ahead	3.21	1.02	3.92	0.94
When I read the newspaper, I read articles about successful people working in my field of interest	3.60	0.87	4.10	0.74
When choosing an occupation, I consider promotion opportunities instead of job characteristics	3.99	0.78	4.47	0.50
I am confident that I will be able to work as well as anyone working in my chosen occupation	4.28	0.77	4.04	0.69
I empower to see what goes on in working environment	3.74	1.11	4.53	0.5
I easily get along with people	4.65	0.48	4.36	0.42

(Source: A survey of CM, PS, and MS of undergraduate students in Thailand)

After the researcher had analyzed the differences of faculties in CM, PS, and MS, the results showed that there were differences in faculties in CM, PS, and MS in four items following by 1) I able to act effectively and creatively in difficult situations, 2) I able to use the means at my disposal to handle situations, 3) I able to apply logical thinking to gathering and analyzing information, and 4) I adapt to changes in the project current environment. On the contrary, the total result of CM, PS, and MS showed that faculties were not significantly different at a confidence level of .05 and the additional information can show in Table 5 and Table 6

Table 5: The differences of faculties on current competencies of career maturity, problem solving skills, and managerial skills

Items	Faculties	F	t	df	Sig.
I able to act effectively and creatively in difficult situations	Science	49.02	-5.06	162.00	.00

Items	Faculties	F	t	df	Sig.
	Education		-4.83	103.34	.00
I able to use the means at my disposal to handle situations	Science	49.02	6.66	162.00	.00
	Education		6.55	142.95	.00
I able to apply logical thinking to gathering and analyzing information	Science	33.03	5.34	162.00	.00
	Education		5.55	140.02	.00
I adapt to changes in the project current environment	Science	34.08	-11.98	162	.00
	Education		-11.52	113.73	.00
Total	Science	.84	-1.68	162	.09
	Education		-1.71	160.92	.08

$p < 0.05$ (*Source: A survey of CM, PS, and MS of undergraduate students in Thailand*)

Table 6: *Descriptive statistics of items differing for faculties*

Items	Science		Education	
	M	S.D.	M	S.D.
I able to act effectively and creatively in difficult situations	3.80	1.06	4.44	.50
I able to use the means at my disposal to handle situations	4.30	0.75	3.60	0.85
I able to apply logical thinking to gathering and analyzing information	4.32	0.90	4.07	0.50
I adapt to changes in the project current environment	4.51	0.77	4.23	0.5

(*Source: A survey of CM, PS, and MS of undergraduate students in Thailand*)

To find out the differences in grade levels on current competencies of career maturity, problem-solving skills, and managerial skills, researchers used One-way ANOVA to find out the answer. Table 7 shows the differences in grade levels on current competencies of CM, PS, and MS. The findings revealed that there were differences in grade levels on CM, PS, and MS in nine items following by 1) I would like the alumni of my school to talk about academic preparation and future careers, 2) In order to live my own life, I have to select an occupation based on my own convictions, 3) I am confident that I will be able to work as well as anyone working in my chosen occupation, 4) I like to solve to a problem, 5) I am self-confident in problem-solving, 6) I use various tools and methods to accomplish specific task, 7) I take responsibility to the delegation of the task, 8) I demonstrate the use of technology in many aspect, and 9) I adapt to changes in the project current environment On the other hands, the total result of CM, PS, and MS items shown that grade levels were not significantly different at a confidence level of .05. The additional information can show in Table 7, Table 8, and Table 9

Table 7: *The differences of grade levels on current competencies of career maturity, problem solving skills, and managerial skills*

Items	variance	SS	df	MS	F-ratio	Sig.
I would like the alumni of my school to talk about academic preparation and future careers	Between Groups	2.75	3	.91	2.71	.047
	Within Groups	54.22	160	.33		
	Total	56.97	163			
In order to live my own life, I have to select an occupation based on my own convictions	Between Groups	14.38	3	4.79	5.83	.001
	Within Groups	131.39	160	.82		
	Total	145.77	163			
I am confident that I will be able to work as well as anyone working in my chosen occupation	Between Groups	14.53	3	4.84	10.48	.000
	Within Groups	73.95	160	.46		
	Total	88.48	163			
I like to solve to a problem	Between Groups	93.32	3	31.10	65.15	.000
	Within Groups	76.39	160	.47		
	Total	169.72	163			
I am self-confident in problem solving	Between Groups	84.73	3	28.24	49.46	.006
	Within Groups	91.36	160	.57		
	Total	176.09	163			
I use various tools and methods to accomplish specific task	Between Groups	65.85	3	21.95	34.04	.018
	Within Groups	103.16	160	.64		
	Total	169.02	163			
I take responsibility to the delegation of the task	Between Groups	10.16	3	3.38	7.70	.000
	Within Groups	70.38	160	.44		
	Total	80.55	163			
I demonstrate the use of technology in many aspect	Between Groups	11.42	3	3.80	5.65	.012
	Within Groups	107.79	160	.67		
	Total	119.22	163			

Items	variance	SS	df	MS	F-ratio	Sig.
I adapt to changes in the project current environment	Between Groups	14.89	3	4.96	5.63	.001
	Within Groups	141.13	160	.88		
	Total	156.02	163			

(Source: A survey of CM, PS, and MS of undergraduate students in Thailand)

Table 8: Descriptive statistics of items differing for grade levels

Items	Freshmen		Sophomore		Junior		Senior	
	M	S.D.	M	S.D.	M	S.D.	M	S.D.
I would like the alumni of my school to talk about academic preparation and future careers	4.44	0.67	4.48	0.59	4.31	0.53	4.67	0.52
In order to live my own life, I have to select an occupation based on my own convictions	4.49	0.67	4.48	0.59	4.31	0.53	4.67	0.52
I am confident that I will be able to work as well as anyone working in my chosen occupation	3.80	0.75	3.90	0.79	4.49	0.56	4.41	0.58
I like to solve to a problem	4.46	0.50	4.55	0.50	3.06	0.87	2.96	0.82
I am self-confident in problem solving	3.15	0.91	3.00	0.96	4.51	0.51	4.50	0.51
I use various tools and methods to accomplish specific task	3.22	0.94	3.07	0.92	3.40	0.81	4.61	0.49
I take responsibility to the delegation of the task	4.27	0.74	3.98	0.84	4.66	0.48	4.48	0.51
I demonstrate the use of technology in many aspect	3.85	1.06	3.98	1.02	4.49	0.51	4.39	0.49
I adapt to changes in the project current environment	3.83	1.02	3.81	1.15	3.49	0.92	4.33	0.60

(Source: A survey of CM, PS, and MS of undergraduate students in Thailand)

Table 9: Mean differences comparing with each grade levels (LSD: Post Hoc Test)

Items	Grade Level	\bar{X}	Freshmen	Sophomore	Junior	Senior
I would like the alumni of my school to talk about academic preparation and future careers	Junior	4.31				-.359*
	Senior	4.67				
In order to live my own life, I have to select an occupation based on my own convictions	Freshmen	4.49			-.846*	-.449*
	Sophomore	4.48			-.590*	
	Junior	4.31				
	Senior	4.67				
I am confident that I will be able to work as well as anyone working in my chosen occupation	Freshmen	3.80				-.608*
	Sophomore	3.90			-.581*	-.508*
	Junior	4.49	.681*			
	Senior	4.41				
I like to solve to a problem	Freshmen	4.46			1.406*	1.507*
	Sophomore	4.55			1.490*	1.591*
	Junior	3.06				
	Senior	2.96				
I am self-confident in problem solving	Freshmen	3.15			-1.368*	-1.354*
	Sophomore	3.00			-1.514*	-1.500*

Items	Grade Level	\bar{X}	Freshmen	Sophomore	Junior	Senior
	Junior	4.51				
	Senior	4.50				
I use various tools and methods to accomplish specific task	Freshmen	3.22				-1.389*
	Sophomore	3.07				-1.537*
	Junior	3.40				-1.209*
	Senior	4.61				
I take responsibility to the delegation of the task	Freshmen	4.27		.292*	-.389*	
	Sophomore	3.98			-.681*	-.502*
	Junior	4.66				
	Senior	4.48				
I demonstrate the use of technology in many aspect	Freshmen	3.85			-.632*	-.538*
	Sophomore	3.98			-.509*	-.415*
	Junior	4.49				
	Senior	4.39				
I adapt to changes in the project current environment	Freshmen	3.83				-.497*
	Sophomore	3.81				-.517*
	Junior	3.49				-.840*
	Senior	4.33				

$p < 0.05$ (*Source: A survey of CM, PS, and MS of undergraduate students in Thailand*)

6. Discussion

The analysis results of current competencies of career maturity, problem-solving skills, and managerial skills of undergraduate students.

Students who participated in this pilot study had high-level competencies of overall career maturity, problem-solving, and managerial skills. However, if we consider each item, especially questions about their life planning or occupation planning in their future, a researcher had found that its mean value was still lower than questions about technology use or communication skills. By the way, students in the modern era have so much potential, they may learn from new technologies, social media, free online courses, etc. which is useful and convenient for them as they can learn everywhere and every time. (Lahiri, M., and Moseley, J. L., 2015) On the other hand, these conveniences may create a lazy mindset of people which can explain why a student may not want to learn how to do a plan or learn problem-solving tools to solve problems in their everyday life anymore because all the answers they want were already in their electronic devices. (Van Erkel, P. F., and Van Aelst, P., 2021) So, it's not surprising that the mean value points for an item that is asked about the planning or managerial part are lower than the self-confidence part or communication part. Therefore, students need to enhance these managerial and problem-solving competencies to develop their management skills to prepare for work-life in their future.

Comparison results on current competencies of career maturity, problem-solving skills, and managerial skills across different gender, faculties, and grade levels

The results of this study revealed that there are gender differences in some items on current competencies of career maturity, problem-solving skills, and managerial skills but for the total result of CM, PS, and MS, this pilot study has shown that gender was not significantly different. This result can explain by nowadays, every gender can access a good quality of education so, even males or females can have high competencies in these skills by the way. (Gråstén, A., Kokkonen, J., and Kokkonen, M., 2022) In the part of faculties differences, there are differences in some items on current competencies of CM, PS, and MS. For example, undergraduate students from the faculty of science are usually able to apply logical thinking to gathering and analyzing information better than undergraduate students from the faculty of Education. This result can explain by undergraduate students from the faculty of science may always be trained to think and do logically to find the answer to their problems. (Abbas, R. M. A., and Abdullah, A. D. K. M., 2022) The differences in grade levels on current competencies of CM, PS, and MS, the researcher noted that some of the items have markedly different mean values of different grade levels. For example, undergraduate students in the lower grade level like to solve a problem more than students in the higher grade level. On the other hand, students in the higher grade level have self-confidence in problem-solving more than students in the lower grade level. The reason for this result may explain by students in the lower grade levels are younger, they feel fun and challenged to solve many problems without less considering the consequences, meanwhile, students in higher grade levels have more confidence in their knowledge base and previous experience more than students that in the lower grade levels.

7. Conclusion, Limitation, and Scope of Future Research

According to the pilot study results, the researcher can be concluded that gender, faculty, or even grade levels did not significantly differentiate the overall skill levels of CM, PS, and MS. Although, if we consider in some questions that students of different gender, faculties, and grade levels have different competencies of CM, PS, and MS may be due to their previous experiences, age, responsibility, learning environment, etc. So, it is good news for teachers because they can develop, organize and design teaching and learning activities for undergraduate students to improve their CM, PS, and MS competencies whatever the gender, faculties, and grade levels they

are. You can use results from this pilot study to increase competitiveness for students and prepare students to be qualified to apply for future employment. On the other hand, nowadays the way that students use to solve their problems mostly relied on the internet e.g. google, electronic devices, influencers, etc. It is a convenient way to solve a problem but on the other side, students may not want to practice and develop their problem-solving skills or managerial skills to solve their real-life problems they may not find the answer from the internet and still meet the objectives of Thai government about 21st century that be a more sustainable way of learning that they never meet a dead end on their life journey. This pilot study had a small number of participants that responded to the questionnaire. 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. In future research, researchers should consider factors of learning achievement as well, also try to collect more data from undergraduate students in Thailand and analyze the correlation of each item in CM, PS, and MS, too.

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