A Study of Factors Affecting the Self-managerial Skills of Undergraduate Students on Online Learning

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***Abstract*—Nowadays, undergraduate students have to change from on-site classroom learning to online learning; hence, building self-managerial skills is essential to their success in online learning. The goal of this study was to investigate the impact of various factors on undergraduate students' self-managerial skills in online learning. A questionnaire was designed and distributed directly to respondents via the online system, and 1,057 valid responses were collected and evaluated. In this study, the data were analyzed using exploratory factor analysis (EFA) and multiple regression techniques. The current findings revealed that self-appraisal (SA), planning skills (PSSP), organizing skills (PSSO), evaluating skills (PSSE), and interpersonal skills (IPS) had effects on self-managerial skills (SMS) of undergraduate students in Thailand. This study has a benefit for professors or lecturers who must design and build modern online classroom through an online learning management system that enhances the competency of undergraduate students' self-management skills and prepares them for future careers.**

***Index Terms*—Self-managerial skills, problem-solving skills, online learning, undergraduate student**

I. Introduction

At present, online learning requires undergraduate students to rely more on their self-learning competences, problem-solving abilities, and self-managerial skills than in-classroom learning [1]. The reasons for this were that while students were in their classroom, they could inquire or consult their teacher or lecturer while studying, but this was not the case for online learning. Students encountered several difficulties while learning independently online [2]. During the COVID-19 crisis, undergraduate students were required to study alone online using internet platforms such as Microsoft Teams, Zoom, Moodle, and others, which might cause them to experience greater anxiety and exhaustion than if they had studied in a normal onsite classroom [3]. Self-managerial abilities are an important feature that can positively sustain undergraduates' academic performance since online learning requires students to control their learning process [4]. As a result, the author must understand the factors impacting self-managerial skills based on problem-solving models [5–7] and managerial skills models [8, 9].

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Thailand is one of the countries that recognizes the importance of developing learners' competencies through 21st-century policies, which may be referred to as learning skills, literacy skills, and life skills such as self-managerial skills [10]. Nowadays, University teachers or lecturers are working to enhance undergraduate students' competency in self-managerial skills since doing so increases their potential to use these skills. They can use them in their daily lives, at employment, and to increase their chances of academic success [11].

Many research findings imply that self-managerial abilities influence problem-solving components such as planning, organizing, and assessing skills. This is since problem-solving skills and self-managerial skills are closely associated and may affect one another [12]. Effective problem-solving requires strong self-managerial skills such as self-motivation, time management, and self-regulation, while developing problem-solving skills can also help improve self-managerial abilities [13, 14]. To enhance good self-managerial skills by developing problem-solving skills in undergraduate students, a researcher found that there were a few gaps in this research area, which were that students should not only have skills of self-problem-solving but also skills of self-appraisal to run the process of evaluating one's performance. In the context of personal development, self-appraisal skills can help individuals gain a deeper understanding of themselves, their values, and their aspirations [15]. It involves introspection and self-reflection to assess one's beliefs, attitudes, emotions, and behaviors. Individuals can identify areas of growth, areas where they excel, and areas where they may need to make changes or acquire new skills by examining their own thoughts and actions, which is a valuable tool for personal growth because it encourages self-awareness, promotes accountability, and supports the development of realistic goals and action plans. Furthermore, undergraduates should have interpersonal skills since they must interact and cooperate well with friends or team members to complete their work or assignments successfully. Thus, the hypotheses for this research will be:

H1: self-appraisal has a positive impact on self-managerial skills.

H2: planning skills has a positive impact on self-managerial skills.

H3: organizing skills has a positive impact on self-managerial skills.

H4: evaluating skills has a positive impact on self-managerial skills.

H5: interpersonal skills has a positive impact on self-managerial skills.

The corresponding research hypotheses are described and presented in Fig. 1.

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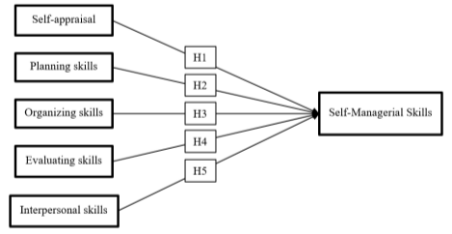

Fig. 1. Research model.

II. Literature Review

A. Problem-Solving Skills

Undergraduate students who have to study online need to have good problem-solving skills and self-managerial skills, which may help them deal with a variety of situations, identify the best way to learning online and effectively address their life issues [16]. Problem-solving skills may be described as the ability to solve problems in different situations. They are the efforts necessary to achieve a goal or discover a solution when there is no automatic solution [17, 18].

The model consisted of three components as follows: 1) planning skills, the ability to identify the process of preparing information before beginning to solve the problem, including the scope of the problem area, understanding tasks and requirements, setting goals, and predicting the results [19]; 2) organizing skills, the ability to run the process of managing the information and resources available during problem-solving [19], and 3) evaluating skills, the ability to assess or judge ideas, arguments, situations and the quality of information, e.g., relevance, accuracy, and effectiveness of information [20]. It involves analyzing and making informed judgments based on evidence and criteria.

B. Self-managerial Skills

Self-managerial skills are one of the most important soft skills for self-improvement, which can refer to the abilities and competencies required for effectively managing people, resources, and processes in an organization. Students can also apply these skills to manage and solve their problems in daily life [8, 21].

C. Self-appraisal

Another issue that can be an important tool for self-reflection and self-improvement may also affect self-managerial skills, such as self-appraisal, the ability to run the process of evaluating one's performance, strengths, weaknesses, and skills [22]. Self-appraisal skills may have an influence on online learning because they enable students to set personal goals and assess their progress toward those goals, which is necessary for success in any learning environment. Self-appraisal has positively related to academic achievement among undergraduate students in online courses [23]. Students who examined their own learning progress on a regular basis and then adjusted their study strategies accordingly were more likely to be engaged in the course and reported greater satisfaction with the learning experience [24].

D. Interpersonal Skills

Interpersonal skills, the abilities to interact and communicate effectively with others in a variety of settings [25]. They are the abilities and actions that allow people to form meaningful connections with others and successfully collaborate to achieve common goals. Moreover, interpersonal skills also have an impact on learning achievement [26], students who possessed higher levels of social skills, such as cooperation, communication, and self-control, demonstrated better academic performance across different subjects [27].

Previous research has found that self-managerial abilities can have a major influence on online learning [28]. Online learning requires students to take a greater degree of responsibility for their learning, as they do not have the same level of face-to-face interaction with instructors and peers as they would in a traditional classroom setting. This means that self-managerial skills, such as time management, self-motivation, and self-regulation, are especially important for success in online learning. Students who had better self-managerial skills were more likely to complete online courses, achieve higher grades, and report greater satisfaction with the online learning experience [29]. Another study found that self-managerial skills were positively related to learner engagement in online learning. They were more likely to participate actively in online discussions, complete course assignments on time, and demonstrate a greater sense of self-efficacy and self-regulation [30].

III. Research Methodology

In this study, a questionnaire to survey the competency of self-appraisal, planning skills, organizing skills, evaluating skills, and self-managerial skills for undergraduate students in Thailand was developed and tested for content validity (IOC: Index of Item-Objective Congruence Method) by three experts from the management and education fields.

A. Participants

At present, Thailand had a total number of 1,451,157 undergraduate students, with 579,992 males (39.97%) and 871,165 females (60.03%) [31]. The study used convenience sampling with undergraduate students in Thailand. The current sample of this study included 1,057 undergraduate students from Thailand in 2022 and used Google form link to distributed online questionnaire to samples.

Table I shows the frequency of participants by gender, grade level, and faculty.

TABLE I: Frequency of Samples Separated by Gender, Grade Level and Faculty

		N	Percent
Gender	Male	532	50.3
	Female	525	49.7
	Total	**1,057**	**100**
Grade Level	Junior	694	65.7
	Senior	363	34.3
	Total	**1,057**	**100**
Faculty	Science	306	28.9
	Education	409	38.7
	Architecture	72	6.8
	Information Technology	71	6.7
	Business Management	199	18.8
	Total	**1,057**	**100**

There were 532 males (50.3%), and 525 females (49.7%) participated in this survey and they were 694 junior students (65.7%) and 363 senior students (34.3%). In addition, they were from five faculties, the Faculty of Science (306 participants or 28.9%), the Faculty of Education (409 participants or 38.7%), the Faculty of Architecture (72 participants or 6.8%), the Faculty of Information Technology (71 participants or 6.7%), and the Faculty of Business Management (199 participants or 18.8%).

B. Procedures

The work was approved by the university in accordance with the code of research ethics. Participants were given a thorough description of the study's objectives as well as the methodology for giving the questionnaire. The questionnaire did not reveal any personal information and so kept the study confidential. There were also no questions that elicited an emotional response from the responders.

C. Questionnaire

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

1) Created factors for questionnaire based on related literature about self-appraisal, planning skills, organizing skills, evaluating skills, interpersonal skills, and self-managerial skills. Table II shows the number of items and source of each factor.

TABLE II: NUMBER OF ITEMS AND SOURCE OF EACH FACTOR

Factors	No. of item	Adapted from
self-appraisal (SA)	5	Loza *et al*., 2000 [32]
planning skills (PSSP)	6	Sahin *et al*., 1993 [5]
organizing skills (PSSO)	6	Maydeu *et al*., 1997 [6]
evaluating skills (PSSE)	4	Lohman, 2004 [7]
interpersonal skills (IPS)	4	Moely *et al*., 2002 [33]
self-managerial skills (SMS)	6	Silva, 2021 [8]

2) Assessed the questionnaire's content validity using Index of Item-Objective Congruence technique, IOC, by three professionals from the management and education fields. According to the assessment results, each item's IOC index varies from 0.67 to 1.00 is acceptable.
3) This questionnaire was assessed to verify the appropriateness of language employing the back translation method by two bilingual specialists.

The validated questionnaire then was used to gather information from undergraduate students in Thailand. The questionnaire had divided into two main sections:

Section 1: participant's general information

Section 2: self-evaluation based on six factors in this study

In Section 2, participants could respond questionnaire using 5 points Likert-type scale followed by strongly disagree (1), disagree (2), neutral (3), agree (4), and strongly agree (5).

D. Data Analysis

After screening and rejecting incomplete questionnaire responses for example, respondents who replied with the same number for all questions or did not complete all of questions in questionnaire then begin coding and data entry. SPSS was used to analyze data collected, and multiple regression techniques were used to test the hypotheses. However, before using multiple regression approaches to verify the assumptions, we performed scale reliability analysis and exploratory factor analysis (EFA). Cronbach's Alpha was used to test scale reliability for each of the underlying components. The purpose of this test was to explore if the observed variables had the same measurement for a certain measuring item. According to Gliem and Gliem [34] a Cronbach's Alpha ranging from 0.7 to 1 indicates a good scale which is acceptable.

In terms of Corrected Item-Total Correlation value, the value was employed when this number is between 0.3 and above [35]. To identify representative factors of variables, EFA analysis was performed on all observed variables using Varimax rotation and eigenvalues larger than 1. Pearson correlation was used to test the linear relationship between components. If the correlation coefficient between the dependent and independent variables is significant, the variables are significant and linear analysis is applicable [36].

Following correlation analysis, a multiple linear regression analysis is performed with a significance of 0.05 to assess the presented hypotheses, the suitability of the model, and the level of impact that observed variables can have on the dependent variable.

IV. RESULTS AND DISCUSSION

A. Results

The SPSS program was used to analyze the data, and Table III shows the reliability of scales using Cronbach's alpha for each factor. In this study, the returned results for the coefficient Cronbach's alpha are all greater than 0.7, and Corrected Item-Total Correlation is all greater than 0.5, demonstrating that the scales used fulfill the reliability requirement.

TABLE III: RESULTS OF RELIABILITY ANALYSIS

Factor	Cronbach's Alpha	Minimum of Corrected Item-Total Correlation
SA	0.953	0.743
PSSP	0.947	0.803
PSSO	0.919	0.697
PSSE	0.893	0.703
IPS	0.952	0.835
SMS	0.964	0.830

In part of Exploratory Factor Analysis (EFA), the Kaiser-Meyer-Olkin (KMO) test and Bartlett's test of Sphericity scored 0.781, which was within the acceptable range of 0.5 to 1. On the other hand, 31 observed variables converged on 6 factors in line with the theoretical model. The factor loading of observed variables was greater than 0.5 thus all variables were kept in the model. The analysis result from

the rotated component matrix can show in Table IV

TABLE IV: ROTATED COMPONENT MATRIX

	Component					
	1	2	3	4	5	6
SA1			0.868			
SA2			0.821			
SA3			0.768			
SA4			0.838			
SA5			0.824			
PSSP1		0.794				
PSSP2		0.833				
PSSP3		0.878				
PSSP4		0.887				
PSSP5		0.852				
PSSP6		0.815				
PSSO1				0.790		
PSSO2				0.829		
PSSO3				0.795		
PSSO4				0.812		
PSSO5				0.791		
PSSO6				0.851		
PSSE1						0.805
PSSE2						0.926
PSSE3						0.838
PSSE4						0.729
IPS1					0.906	
IPS2					0.922	
IPS3					0.903	
IPS4					0.945	
SMS1	0.882					
SMS2	0.887					
SMS3	0.927					
SMS4	0.924					
SMS5	0.846					
SMS6	0.915					

Pearson correlation coefficient was used to analyze the correlation between each variable. Correlation coefficients showed that the relationships between dependent variables and independent variables all have statistical meaning. The result of the correlation matrix of this study revealed that all variables have significantly correlated at 0.01 level which can show in Table V.

TABLE V: CORRELATIONS MATRIX

	Correlations					
	SA	PSSP	PSSO	PSSE	IPS	SMS
SA	1	0.515**	0.307**	0.173**	0.157**	0.397**
PSSP		1	0.156**	0.259**	0.291**	0.240**
PSSO			1	0.339**	0.299**	0.259**
PSSE				1	0.090**	0.156**
IPS					1	0.356**
SMS						1

** Correlation is significant at the 0.01 level (2-tailed)

For hypothesis testing, the researcher used multiple regression analysis with self-managerial skills as dependent variables and five independent variables, followed by self-appraisal, planning skills, organizing skills, evaluating skills, and interpersonal skills. The result of this part revealed that all of five independent variables have standardized (beta) coefficients of 0.602, 0.188, 0.187, 0.131, and 0.065, respectively, with significant values less than 0.05. Therefore, all five hypotheses, which consist of H1, H2, H3, H4, and H5, have been supported. The result of this part can show in Table VI.

TABLE VI: RESULT OF MULTIPLE REGRESSION OF FACTORS IMPACT SELF-MANAGERIAL SKILLS (SMS)

M		Unstandardized Coefficients		Standardized Coefficients	t	Sig.	Collinearity Statistics	
		B	Std. Error	Beta			T	VIF
1	(C)	1.915	0.1		19.151	0.000		
	SA	0.095	0.014	0.602	27.299	0.000	0.882	1.133
	PSSP	0.028	0.011	0.188	7.019	0.000	0.595	1.681
	PSSO	0.114	0.015	0.187	7.634	0.000	0.714	1.400
	PSSE	0.089	0.016	0.131	5.559	0.000	0.775	1.290
	IPS	0.391	0.014	0.065	2.468	0.010	0.622	1.608

a. Dependent Variable: self-managerial skills (SMS)
b. R square = 0.549, Adjusted R square = 0.547, F = 256.364, Sig. = 0.000
Note(s): M = Model, C = Constant, T = Tolerance

Regression analysis gives us the linear regression equation as follows:

$$SMS = 0.602 \times SA + 0.188 \times PSSP + 0.187 \times PSSO + 0.131 \times PSSE + 0.065 \times IPS$$

Through the above equation, we see that self-appraisal has the strongest impact on self-managerial skills, followed by planning skills, organizing skills, evaluating skills, and inter-personal skills respectively.

B. Discussion

The main contribution of this paper was the integration of the theory of problem-solving skills and the self-managerial skills model by adding the factor of self-appraisal to the investigation of the self-managerial skills of undergraduate students in Thailand and investigating the effects of different factors on the self-managerial skills of undergraduate students for online learning. On the other hand, this paper has also rechecked the vague relationship that existed in previous studies between self-appraisal and self-managerial skills, too.

This study revealed that self-appraisal, planning skills, organizing skills, evaluating skills, and interpersonal skills affected self-managerial skills in undergraduate students from Thailand.

This shows similarity to the findings by Bouzgarrou and Zghal [37], their content examined the relationship between self-appraisal and managerial skills. They found that self-appraisal had a positive impact on self-managerial skills, including communication skills, problem-solving skills, and decision-making skills. Another previous study had examined the impact of self-appraisal on leadership development to enhance managerial skills. They found that self-appraisal was positively related to leadership development and can be an effective tool for improving self-managerial skills, too [38].

Self-appraisal had a positive impact on self-managerial skills because it is a crucial element of self-reflection and self-development and may help individuals recognize their strengths and limitations, establish improvement objectives, and take measures to accomplish those goals [35]. By engaging in self-appraisal, individuals can obtain a deeper understanding of their own performance and potential, as well as develop a clearer sense of direction for their personal and professional life. This, in turn, can help to enhance their managerial skills by improving their ability to lead and manage others, communicate effectively, solve problems, and

make decisions based on evidence and criteria. Moreover, self-appraisal can be an important tool for enhancing self-managerial skills by promoting self-awareness, self-improvement, and a growth mindset, too. This shows similarity to the findings by Li *et al*. [39] and Day *et al.* [40], the previous studies found that self-appraisal can enhance self-managerial skills such as communication, decision-making, and leadership. People who engaged in self-appraisal were more likely to demonstrate positive behaviors, such as empathy, active listening, and collaboration which are important for effective study and leadership.

V. Conclusion

This study has pointed out that planning skills, organizing skills, evaluating skills, and interpersonal skills carry an impact on self-managerial skills. This study's results have also proved that self-appraisal is a factor that carries a significant impact on self-managerial skills. Thus, to improve undergraduate students' self-managerial skills, self-appraisal can be an important tool for enhancing managerial skills by promoting self-awareness, self-reflection, inter-personal skills, problem-solving skills, and continuous improvement which teachers or lecturers should build and develop with their students along with the good environment of online classroom and good learning management system to achieve their goals and have a positive learning experience.

Hence in the future, the study of the impact of information-seeking behaviors and self-managerial skills may further investigate.

VI. Limitation

In this study, still had a small number of convenient randomized samples and online questionnaires were used to collect data then respondents will evaluate their competencies by themselves. This may cause inaccurate results because each respondent had different standards of assessment even though the self-assessment criteria were clarified to the respondents.

Conflict of Interest

The authors declare no conflict of interest

Author Contributions

Kanjana Tayaborworn was the key author who carried out the current study consisting of designing and developing the questionnaire, collecting and analyzing data and wrote the current article. Surachai Suksakulchai was the corresponding author who reviewed the research's direction, and authorized the final version of the paper.

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