

Strategies for the Successful Implementation of a Workflow System for SEM within Education

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Abstract - The implementation of computerized workflow systems to enable higher education institutions to remain highly competitive in the drive for student recruitment has been an area of focus in education for decades. This case study included a requirement analysis stage followed by implementation and evaluation of a workflow system for Strategic Enrollment Management (SEM). The study built upon Student Enrollment Activities Tracking System and aimed to: i) identify the needs of e-SEM enrollment management system, ii) develop an e-SEM enrollment management system as a prototype for an institution, and iii) determine the effectiveness of the prototype. Our findings indicated that a workflow system is a strategic solution to the recruitment problem. Key factors for success lie in the flow of data into and through the system and the notifications of the service system. Organizational understanding of the function, functional requirements, usability and notifications of the system are also necessary. For greater insights, the applicability of the system in more organizations and through a variety of portable devices and platforms should be further investigated.

Keywords - Workflow System, Strategic Enrollment Management, e-SEM Enrollment Management System.

I. INTRODUCTION

In an increasingly global and technologically driven world, higher education institutions have been consistently faced with high levels of customer scarcity that was not present two decades ago. To remain highly competitive in this crisis, the higher education institutions need to make strategic decisions in a timely and efficient manner. Strategic Enrollment Management (SEM) which is engaged with the strategic decisions are engaged with uses of data in the recruitment, enrollment, management and attendance process to allow the institutions to highly remain competitive in areas of enrollment and planning, as well as finance and administration has, therefore, become a solution to the scarcity of customers in higher education institutions worldwide.

However, universities in Thailand have not operated the SEM systematically. The SEM-related process is embedded in various departments, each of which operates its job separately while some of which partially operated under-connected data systems. This inefficiency results in the universities' inability to reach their goals of student recruitment in terms of numbers of new students. Also, the lack of SEM affects students who encounter numerous problems regarding registration, selection of subjects, and poor academic performances, which may result in resignation, dropping out, and lower graduation rates. Moreover, the quality of graduates may not reach the level that employers expect.

Prior research study indicated that SEM had played a vital role in college enrollment since the last century as a

primer for campus administrators [1], especially on the issue of strategies for effective enrollment management [2]. Its role has become increasingly significant in this new era, moving to a new direction as revealed in A College at the Crossroads [3], significant growth within a 10-year period in private college enrollment in the Midwest [4], and enrollment management for the 21st century [5]. Explorations on SEM involved defining enrollment management [6], key elements [7], the structural frame [8], building organizational capacity for enrollment performance [9] and transforming higher education [10].

Primarily, prior SEM research focuses on these areas: core strategies, implementation of enrollment management, evaluation and measurement on strategic enrollment management, models and successful best practices, and factors of successful enrollment management.

Prior study on core strategies have been moving around marketing. Prior research includes a comprehensive approach to college student marketing [11], relationship marketing at work [12], seamless integration of predictive analytics and CRM within an undergraduate admissions recruitment and marketing plan [13], examining the representation of mission statements within admissions marketing materials [14], choices [15], anticipatory enrollment management [16], the relationship between community college entrepreneurial orientation, enrollment management orientation, and performance [17], strategic enrollment management (SEM) in a continuing education institution [18], and expanding the role of institutional research at small private universities in enrollment management using data mining [19].

The implementation of enrollment management illustrates two public universities experiencing demographic and funding

challenges [20], decision support for university enrollment management [21] and early alert and intervention systems and student persistence in student perceptions [22].

Investigation on evaluation and measurement on strategic enrollment management (SEM) includes an evaluation of enrollment management models of the 28 Florida community colleges [23], an assessment of enrollment management at community colleges [24], an evaluation of the enrollment management organization [25] and measuring the effect of incountry recruitment activities on future international enrollment [26].

Models and successful best practices involves modeling success, using pre-enrollment data to identify academically atrisk students [27], aligning competencies with success [28], successful practices and models of enrollment management [29], a conceptual management model of strategic enrollment [30] and effectiveness and usage at member institutions [31].

Successful enrollment management gets engaged with numerous factors and conditions regarding administrators' perceptions of factors related to student retention [32], administrators' perceptions of the enrollment management practices [33], strategic enrollment management in the age of austerity and changing demographics: managing recruitment, leveraging, revenue, and access in challenging economic times [34], the interrelationships between self-concept, motivation, and university experience among students of self-financing higher education institutions in Hong Kong [35], understanding the admissions experience of admitted students who fail to enroll [36], decision making with data [37], effective academic advising [38], and early alert and intervention systems and student persistence [22].

Collectively, built upon the aforementioned prior study, this present research study aimed to develop a workflow information technology system for tracking with a specific objective to increase the efficiency of recruitment management and data analysis to support executives' decisions relevant to determine the SEM plan.

II. PROBLEM STATEMENT AND RESEARCH QUESTIONS

Currently, the Lampang Rajabhat University or LPRU has no regular EM operation. EM-related procedures are embedded in various departments, some of which are partially connected. This inefficiency indicates the lack of effective enrollment management and strategic plan to document the implementation of the plan, resulting in the inability to attain the target goals of recruitment. In addition, students face difficulties in registration, selection of subjects, achieving excellent results, dropping out or resignation, resulting in lower graduation rates, and poor quality of graduates which cannot meet the demands of employers. This present study therefore investigated the issue with the following research questions:

1) What are the needs of the e-SEM enrollment management system as a road map for achieving specific institutional goals?

2) What is the workflow of the developed e-SEM enrollment management system as a proposed prototype for LPRU?

3) To what extent is the proposed e-SEM enrollment prototype useful for LPRU specific institutional goals effective as assessed by the experts?

III. RESEARCH STUDY

Research Design: This study employed a mix-method research design. The design of this study followed these procedures. The researcher began to study the operation and service of LPRU e-SEM and collect data from the questionnaire and in-depth interviews on the e-SEM procedures and system integration. Next, the researcher analyzed and designed information systems that support e-SEM and system integration as well as determining performance and services indicators. Then, the researcher developed information technology system, e-SEM or system which was then assessed in terms of the effectiveness of the e-SEM system in the areas regarding the support of marketing operations and admission as well as procedures that maintain students until completion of the study program by a questionnaire and an in-depth interview. Quantitative data from a questionnaire and qualitative data from an in-depth interview were used for needs analysis and assessment of the effectiveness of the developed SEM workflow.

Procedures: The design of this study followed these procedures. First, the researcher reviewed related literature and prior study on e-SEM and studied the operation and service of e-SEM at LPRU and collect data from the questionnaire and in-depth interviews on the e-SEM procedures and system integration. Next, the researcher analyzed and designed information systems that support e-SEM and system integration as well as determining performance and services indicators. Then, the researcher developed information technology system, e-SEM or system which was then assessed in terms of the effectiveness of the e-SEM system in the areas regarding the support of marketing operations and admission as well as procedures that maintain students until completion of the study program by a questionnaire and an in-depth interview.

Population and Sample: The population in this study was about 400 LPRU administrators, officials, and academic staff. The population of 400 equaled to the sample size of 196 as determined by the sample calculation of Krejcie and

Morgan at the confidence level of 95%. The samples in this study were 200 personnel. This study used multi-stage random sampling, beginning with grouping of departments and then being followed by simple random sampling based on population proportion in each department. The samples included these two groups: office of the president and faculties. The office of the president included the president and executives, administrators, education service personnel, personnel, registration and evaluation departments, public relations personnel and graduate school personnel who take responsibility in formulating policies and strategies for recruitment and management from admission to graduation. The faculty members were administrators of all six faculties including the dean, deputy deans, assistant deans, chairs, and academic staffs who supported the course management process in all six faculties (namely, Faculty of Education, Faculty of Science, Faculty of Humanities and Social Sciences, Faculty of Management Science, Faculty of Agriculture and Faculty of Industrial Technology). All samples are in SEM processes.

Instruments: The instruments for data elicitation in this study consisted of two questionnaires and an in-depth interview. There were two sets of 5 scale questionnaires. One was Student Recruitment Management and Attendance Questionnaire which aimed to explore the opinions of the personnel on the needs analysis. The other was Questionnaire for Assessing the Efficiency of the Student Enrollment Management Activities in Tracking System Prototype which aimed to explore the opinions of the personnel on the evaluation of the developed e-SEM prototype. A semi-structured, in-depth interview was then conducted to draw insightful data on the issues regarding characteristics, procedures, and results of e-SEM service, including forwarding to other agencies, tracking alerts, processing reports. The interview fell into three parts: 1) establishment of SEM agency, 2) marketing and student recruitment, and 3) improving the process from recruitment to registration. This in-depth interview was conducted after the former questionnaire was given.

Data Collection: The data were collected during October - December 2018. The data collection followed these procedures. First, the respondents were given the needs analysis questionnaire. Thirty of them were then interviewed in order to draw the details of the e-SEM operating process. Lastly, thirty of them were given the questionnaire to assess the efficiency of the prototype.

Data Analysis: Descriptive statistics including frequency, percent, means and standard deviation were carried out. Data from the interview were qualitatively analyzed to draw the key points. Both quantitative and qualitative analyses were drawn to draw the conclusion of the study.

Scoring Procedure: The 5-level evaluation scale questionnaires were scored as follows: 1)strongly disagree(, 2)disagree(, 3)neutral(, 4)agree(, and 5)strongly agree(. Interpretation data followed the criteria below:

High	: Strongly Agree	= 4.5 to 5.0
	: Agree	= 3.5 to 4.4
Medium	: Neutral	= 2.5 to 3.4
Low	: Strongly Disagree	= 1.5 to 2.4
	: Disagree	= 1.0 to 1.4

Content Validity Check: The questionnaires were constructed in response to the research questions. They were sent to five judges for content validity check of the IOC (Item Objective Congruence Index). The values were 0.90 for Student Recruitment Management and Attendance Questionnaire and 0.98 for Questionnaire for Assessing the Efficiency of the Student Enrollment Management Activities in Tracking System Prototype which indicated high confidence.

Reliability Check: The questionnaires were sent to thirty respondents whose profiles and features were similar to the samples of this study. The data were then analyzed by Cronbach's Alpha Coefficient, and the values of the analyses for the two questionnaires were 0.910 and 0.984 respectively which indicated high confidence.

IV. RESULTS AND DISCUSSION

The results of the study were presented according to the research questions.

Research Question 1: What are the needs of the e-SEM enrollment management system as a road map for achieving specific institutional goals?

The demographic data of the respondents could be summarized as follows. In brief, the majority of the respondents were males (60.00%), working personnel and administrative between 31 and 50 years old (82.00%), working personnel and administrative between 31 and 50 years old and highly educated: master's degree or equivalent and doctoral degree (71.00%). The respondents in this study expressed their opinions on each issue regarding the needs of the e-SEM enrollment management system as seen below.

TABLE I. OPINIONS ON E-SEM OPERATION FACTORS AND THE SUCCESS OF STUDENT RECRUITMENT

Items of the e-SEM operation factors	Levels of Opinion				
	5	4	3	2	1
1. SEM management will be able to increase the number of new students. .	20% (40)	52% (104)	265% (53)	1.5% (3)	0% (0)
2. Digital marketing mechanisms should replace traditional marketing plan.	235% (47)	485% (97)	265% (53)	1.5% (3)	0% (0)
3. Websites are the essential tools for public relations of the university.	375% (75)	45% (90)	17% (34)	0.5% (1)	0% (0)
4. The university needs SEM in order to meet the recruitment goals.	36% (72)	43% (86)	20% (40)	1% (2)	0% (0)

Table I shows that the majority of the respondents agreed that 1) SEM management will be able to increase the number of new students (72% , n = 144) , 2) digital marketing mechanisms should replace traditional marketing plan (75% , n = 153) , 3) websites are the essential tools for public

relations of the university (75% , n = 153), and 4) the university needs SEM in order to meet the recruitment goals (79% , n = 158).

TABLE II. OPINIONS ON THE SERVICES PROVIDED BY THE AGENCIES IN THE AREAS OF RECRUITMENT, SELECTION OF STUDENTS, GUIDANCE, AND REGISTRATION

Items of service of the agency	Levels of Opinion				
	5	4	3	2	1
1. You understand the strategy and plan of the university.	8.5% (17)	49% (98)	41.5% (83)	1% (2)	0% (0)
2. Determining the enrollment index is vital for the management of recruitment.	15% (30)	68% (136)	16.5% (33)	0.5% (1)	0% (0)
3. Data analysis of students can draw the students' attention.	31% (62)	555% (111)	12.5% (25)	1% (2)	0% (0)

Table II shows that the majority of the respondents agreed that 1) they understand the strategy and plan of the university (57.5% , n = 158), 2) determining the enrollment index is vital for the management of recruitment (83.0% , n =

166), and data analysis of students to draw students' attention (83.0% , n = 166).

TABLE III. OPINIONS ON EXECUTING STRATEGY AND SEM STRATEGY

Executing Strategies	Levels of Opinions				
	5	4	3	2	1
1. Dividing students according to fields of study	24% (48)	60% (120)	16% (32)	0% (0)	0% (0)
2. Increasing the number of students in each field	265% (53)	53% (106)	20% (40)	0.5% (1)	0% (0)
3. Expanding the new markets	415% (83)	41% (82)	17.5% (35)	0% (0)	0% (0)
4. Using new technology for recruitment successfully	435% (87)	39% (78)	17.5% (35)	0% (0)	0% (0)
5. Providing financial mechanisms to support recruitment effectively	205% (41)	475% (95)	30.5% (61)	1.5% (3)	0% (0)
6. Creating a new educational program that meets the needs of the market	42% (84)	405% (81)	17% (34)	0.5% (1)	0% (0)

Table III shows that the majority agreed that the system could: 1) divide students according to fields of study is necessary (84.0% , n = 168) , 2) increase the number of students in each field (79.5.0% , n = 159) , 3) expand the new markets (82.5.0% , n = 165) , 4) use new technology for recruitment

successfully (82.5% , n = 165) , 5) provide financial mechanisms to support recruitment and motivate students effectively (68.0% , n = 136) and 6) create a new educational program that meets the needs of the market (82.5.0% , n = 165).

TABLE IV. OPINIONS ON SEM TACTICS AND STRATEGIES

SEM Tactics and Strategies	Levels of Opinions				
	5	4	3	2	1
1. Initiating innovative marketing to increase reputation and image of the university	44% (88)	39% (79)	16.5% (33)	0% (0)	0% (0)
2. Reviewing the programs to promote outstanding academic excellence	43% (86)	45% (91)	11.5% (23)	0% (0)	0% (0)
3. Using multi-channel marketing media	45% (91)	35% (70)	19.5% (39)	0% (0)	0% (0)
4. Reducing the hassle of recruiting new students	40% (80)	43% (86)	17% (34)	0% (0)	0% (0)
5. Promoting the customer relationship system to take care of students and parents	40% (80)	44% (89)	15.5% (31)	0% (0)	0% (0)
6. Providing financial incentives and job-related preparation to job opportunity offer to students	32% (64)	50% (100)	16.5% (33)	1.5% (3)	0% (0)

Table IV shows that the majority of the respondents agreed that the system could initiate innovative marketing to increase reputation and image of the university (83.50%, n = 186), review the programs to promote outstanding academic excellence (82.50%, n = 165), use multi-channel marketing media (82.50%, n = 165), reduce the hassle of recruiting new

students (83.0%, n = 166), promote the customer relationship system to take care of students and parents (84.50%, n = 169) and provide financial incentives and job-related preparation for provide job opportunity offer to students (82.50%, n = 164).

TABLE V. OPINIONS OF DURATION OF SEM TARGET EVALUATION AFTER APPROVAL OF EXECUTION

Duration	Levels of Opinions				
	5	4	3	2	1
1. Short-term goals (1 - 3 years)	34% (69)	45% (90)	20% (40)	0% (0)	0% (0)
2. Medium-term goals (3 - 5 years)	19% (39)	57% (114)	22.5% (45)	1% (2)	0% (0)
3. Long-term goals (5 - 10 years)	18% (36)	56% (112)	24% (48)	1.5% (3)	0.5% (1)

Table V shows that that the majority of the respondents agreed that the system could be effective for short-term goals

(79.50%, n = 159), medium-term goals (79.50%, n = 159), and long-term goals of (74.0%, n = 148) respectively.

TABLE VI. OPINIONS OF USING DIGITAL MARKETING TECHNIQUES IN RECRUITING STUDENTS FROM TARGET GROUP

Features and Characteristics	Levels of Opinions				
	5	4	3	2	1
1. Digital marketing techniques that contain comprehensible information.	45% (91)	41% (83)	13% (26)	0% (0)	0% (0)
2. Webpages to indicate the strengths of the university and links to guidance counselors.	45% (91)	42% (84)	12.5% (25)	0% (0)	0% (0)
3. The university should provide social media link to the pages.	46% (92)	41% (83)	12% (24)	0.5% (1)	0% (0)
4. The university should hire a team of digital marketing specialists.	34% (69)	45% (90)	20% (40)	0.5% (1)	0% (0)

Table VI shows that the majority agreed that the university should provide 1) digital marketing techniques that are easy to use and contains comprehensible and concise information (namely the strengths, 2) links to famous alumni and outstanding students) which can increase recruitment (87.0%, n = 174), 3) webpages to indicate the

strengths of the university and various disciplines, 4) social media sources e.g., Facebook, Instagram, Twitter) to link to the guidance counselors (87.0%, n = 175), social media to link to the pages (87.0%, n = 175) and a team of digital marketing specialists to be responsible for recruitment (87.0%, n = 175).

TABLE VII. OPINIONS OF FACTORS TO SUPPORT THE SUCCESS OF SEM

Factors supporting the success of SEM	Levels of Opinions				
	5	4	3	2	1
1. Set clear goals for student recruitment.	40% (80)	49% (99)	10% (21)	0% (0)	0% (0)
2. Indicate outstanding courses and disciplines that are in trend.	44% (89)	43% (87)	11% (23)	0.5% (1)	0% (0)
3. Indicate the quality of curriculum.	51% (102)	39% (79)	9% (19)	0% (0)	0% (0)
4. Indicate the uniqueness of curriculum.	41% (82)	44% (89)	14% (29)	0% (0)	0% (0)
5. Provide a system and portable devices responsive to new markets.	39% (78)	44% (89)	16% (32)	0.5% (1)	0% (0)
6. Offer financial incentives	28% (57)	50% (100)	21% (43)	0% (0)	0% (0)
7. Provide a system and information to support operation	32% (64)	49% (99)	18% (36)	0.5% (1)	0% (0)
8. Provide alumni system to support recruitment.	31% (62)	50% (100)	18% (37)	0.5% (1)	0% (0)
9. Evaluate strategic planning and SEM systematically.	35% (70)	50% (101)	14% (29)	0% (0)	0% (0)
10. Provide human and natural resources to draw students' attraction.	46% (92)	46% (92)	8% (16)	0% (0)	0% (0)

Table VII shows that the majority agreed that the university should 1) set clear goals for student recruitment (89.0%, n = 179), 2) indicate outstanding courses and disciplines that are in trend (88.0%, n = 176), 3) indicate the quality of curriculum, (89.0%, n = 179), 4) indicate the uniqueness of curriculum appropriately (85.5%, n = 179), 5) provide a system, websites and portable devices (e.g. tablet and smartphone) responsive to new markets (83.5%, n = 167), 6) offer financial incentives and part-time employment to subsidy the new students (78.5%, n = 157), 7) provide a system and information to support every step of the operation (83.5%, n = 167), 8) provide alumni system to support recruitment (83.5%, n = 167), 9) evaluate strategic planning and SEM systematically (85.5%, n = 171) and 10) provide human and natural resources to draw the markets' to the programs (92.5%, n = 184).

Research Question 2: What is the workflow of the proposed e-SEM enrollment management system as a prototype for LPRU?

The proposed SEM prototype which aims at changing from "prospects" to potential "customers" as shown in figure 1 demonstrates the process how effective marketing and

sales turn interested prospects to customers who decide to enroll, study, graduate, and change their status to alumni.

The SEM process consists of these components: 1) traditional marketing (UI1), 2) digital marketing (UI2), 3) Marketing Lead (ML) combining name lists of traditional marketing and digital marketing (UI3), 4) Qualified Market Lead (QML) occurring when interested students request information for decision-making and application (UI4), 5) Sale Lead (SL) which the marketing department sends the list of interested students to the sales department (UI5), 6) Qualified Sale Lead (QSL) which the students participate in university activities, visit the university and fill in the application form (UI6), 7) guidance which the students submit their application form and meet their advisors (UI7), 8) sale closing when the students receive guidance on the study program (UI8), 9) registration which all subjects the students registered are in the systems (UI9), 10) payment which the students have paid for the tuition fees (UI10), 11) commencement orientation when the students attend the orientation (UI11), 12) graduation which tracks and reports the students' graduation in each study program (UI12) and 13) alumni who plays a role as a brand ambassador for the university and recommends new students to the university (UI13).

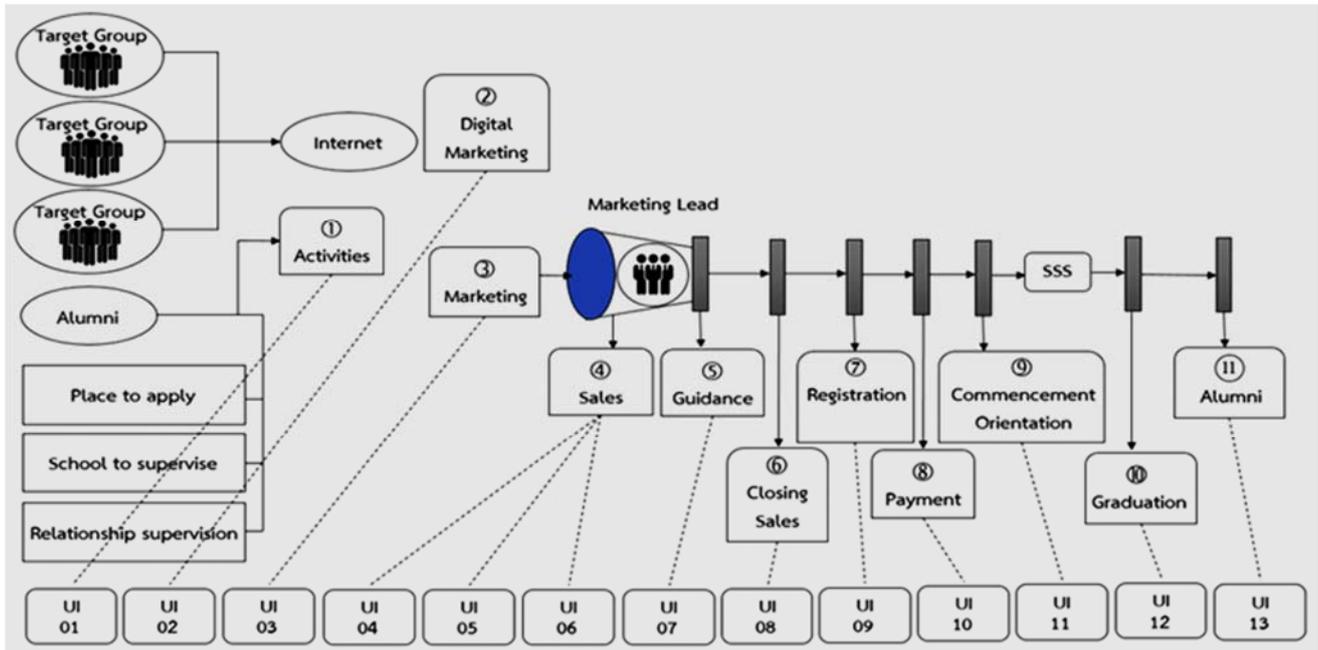


Figure 1. SEM Process and 11 Procedures, and 13 Major User Interfaces

Research Question 3: To what extent is the proposed institutional goals as assessed by the experts? The results of e-SEM enrollment prototype useful for LPRU specific the assessment were shown below.

TABLE VIII. RESULTS OF THE PROPOSED E-SEM ENROLLMENT PROTOTYPE ASSESSMENTS

Evaluation list	\bar{X}	S.D.	Levels of performance
Functional Requirement			
1. Efficiency of the functions	4.30	0.61	High
2. Usefulness of the operations and data usage	4.72	0.45	High
3. Appropriateness and responsiveness of the program to the needs of users	4.38	0.60	High
4. Increase in operational efficiency	4.34	0.59	High
5. Ability and utilization of the system	4.52	0.50	High
Function			
1. Accuracy for importing, storing, updating, editing, deleting and retrieving information	4.46	0.61	High
2. Accuracy for processing	4.58	0.49	High
3. Efficiency and response speed	4.42	0.57	High
4. Information matches the needs of the students	4.46	0.50	High
5. Ability of data collection and data processing to meet the desired objectives	4.40	0.60	High
Usability			
1. Convenience and ease of the system usage	4.48	0.50	High
2. Appropriateness and attraction of design layout	4.20	0.57	High
3. Appropriateness of text, size, pattern, color, font, symbol or picture	4.40	0.63	High
4. Appropriateness of the format and method for Information presentation	4.26	0.69	High
5. Stable service	4.50	0.61	High
Security			
1. Identification of user ID and password for security check	4.82	0.38	High
2. Appropriateness of rights and access to information	4.42	0.49	High
3. Validation of rights and control	4.44	0.50	High
Overview of Usage			
Overall performance on usage	4.60	0.49	High

Table VIII shows the results of the proposed e-SEM enrollment prototype assessment in all aspects as follows:

First, on **functional** requirement, the performance of all items in list was high, ranking from the most to the least as follows:

- 1) Usefulness of the operations and data usage (4.72),
- 2) Ability and utilization of the system (4.52),
- 3) Appropriateness and responsiveness of the program (4.38),
- 4) Increase in operational efficiency (4.34) and
- 5) Efficiency of the functions (4.30) respectively.

Second, on **function**, the performance of all items in the list was high:

- 1) Accuracy for processing (4.58),
- 2) Accuracy for importing, storing, updating, editing, deleting and retrieving information (4.46),
- 3) Information matches the needs of the students (4.46),
- 4) The efficiency of the system response speed (4.42) and
- 5) Ability of data collection and data processing to meet the desired objectives (4.40) respectively.

Third, on **usability**, the performance of all items in the list was high:

- 1) Stable service (4.50),
- 2) Convenience and ease of the system usage (4.48),
- 3) Appropriateness of text, size, pattern, color, font, symbol or picture (4.40),
- 4) Appropriateness of the format and method for information presentation (4.26), and
- 5) Appropriateness and attraction of layout (4.20) respectively.

Fourth, on **security**, the performance of all items in list was high:

- 1) Identification of user ID and password for security check (4.82),
- 2) Validation of rights and control (4.44), and
- 3) Appropriateness of rights and access to information (4.42) respectively.

Fifth and lastly, on an overview of **usage**, overall performance on the user's usage was high (4.60), which indicated that the e-SEM enrollment prototype is highly effective for in all aspects.

In addition, suggestions from the interview revealed additional to the assessment. First, SEM should be established and run promptly. Second, the publicity for recruitment should focus on proactive public relations or direct penetration of students to reach the target group at all levels. Third and lastly, the recruitment service should be one-stop service process.

V. CONCLUSION AND SUGGESTION

The findings of the first research questions which revealed the respondents' opinions of SEM lent essential contributions to the e-SEM enrollment management system which would be developed and proposed as a prototype for LPRU to achieve the institutional goal. The results of the proposed e-SEM enrollment prototype assessment were highly effective in all aspects. The highest on functional requirement evolution was usefulness for operations and data usage. The highest on function evolution, the performance of all items in the list was the accuracy of the results from the processing. The highest on usability evolution was the provision of continuous and stable service always ready to use. The highest on security evolution was defining user ID and password for checking the users of the system. The score on the overview of usage was an overall performance on the user's usage was high.

A future study should investigate the opinions of recipients of the service and stakeholders of the university in order to obtain comprehensive information that will lead to a more insightful picture of the study in this area. Future research and development should move forward to the use of the system through a variety of portable devices to support management on various platforms.

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