

Information Technology Based Entrepreneurship Education in University

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Abstract— The purpose of the research is to investigate the application of Information Technology (IT) on Entrepreneurship Education and to what extent IT effective to support the success of entrepreneurship education by increasing entrepreneurial intention in University. The research was conducted by study case in a Private University in Bandung. This research used quantitative method by adopting DeLone and McLeans Information System (IS) Success Model (2003). The variables used were system quality (SQ), information quality (IQ), use (U), user satisfaction (US), service quality (SEQ) and net benefit (NB). Linear regression and T-test was used to analyze data. The questionnaires were distributed to 100 respondents. Interview to entrepreneurship students and lecturers was also performed. The result of study indicated that all variables significantly influenced the success of IT application on entrepreneurship education. The positive correlation between all variables and significance influence discovered that IT based entrepreneurship education is effective to be applied and increases the entrepreneurial intention of the students. The universities in the development of well integrated IT in entrepreneurship education will gain high levels of entrepreneurial intention. The research provides information to apply IT based entrepreneurship education in university.

Keywords— *Information technology, Entrepreneurship, Education, University*

I. INTRODUCTION

Entrepreneurship has become one of the most desirable area among college students, especially to those who interested in business [1]. Furthermore, entrepreneurship education may have role in promoting entrepreneurial intention among students and lead to the increase in the number of entrepreneur [2]. Linking Entrepreneurship education to Information Technology (IT), the application of IT creates effective teaching in higher education [3]. Among the reason to apply IT in education process are the ease of learning process and the commitment of university to conduct professional learning [4]. Additionally, to meet the challenge of digital world, considerable change and shifting learning process to IT based education is required in entrepreneurship education [5].

A. Charney and Gary D. Libecap in their research found that Entrepreneurship education produces successful business and industry leaders, enhances a graduate's ability to create wealth, produces innovators, lead to greater op-

portunities with advancing technologies [1]. Additionally, entrepreneurship education also enhanced the transfer of technology from the university to the private sector [1, 6, 7]. Unfortunately, these researches highlighted the impact of entrepreneurship education without described how IT play the role in that impact. Solomon (2005) indicates that in the United States the use of technology has increased dramatically in entrepreneurship education. However, in that research was not found the exact measurement concerning the success of technology in entrepreneurship education [8]. Reference [9] said that the use of information technology to support learning is now a major trend in postsecondary management education in North America and elsewhere. Unfortunately, there is no explanation about the application of technology on entrepreneurship education.

In order to provide literature and recommendation about IT based entrepreneurship education in university, in which not yet discussed in depth in the prior researches, this research is aimed to investigate the application of IT on Entrepreneurship Education and to what extent IT effectiveness to support the success of entrepreneurship education in university. The research was conducted by study case in a Private University in Bandung. Quantitative method was used by adopting DeLone and McLeans Information System (IS) Success Model (2003). To measure the success of IT, the variables used are the system quality (SQ), information quality (IQ), use (U), user satisfaction (US), service quality (SEQ) and net benefit (NB). Linear regression was used to analyze questionnaire data. To support data collection, interview with the students and lecturers in the entrepreneurship class was also conducted.

II. METHOD

The research was done on the entrepreneurship class of Universitas Komputer Indonesia. A questionnaire were distributed to 100 persons as the sample on July 9, 2018. Each Statement on the questionnaire was given a score according to the Likert scale [10]. Additionally, interviews with entrepreneurship lecturers and collection of related reports / documents was conducted for completing data analysis.

The linear regression and T test was performed to analyze the questionnaire data. The statements on the questionnaire arranged based on indicator from the previous research [11 – 14]. DeLone and McLean Information System Success Model D&M IS Success Model (Figure 1) has been widely used to measure the dimensions of Information system success in previous research [11 – 14]. The measured dimension success were Information Quality (IQ), System Quality (SQ), Service Quality (SEQ), Use (U), User Satisfaction (US) and Net Benefit (NB).

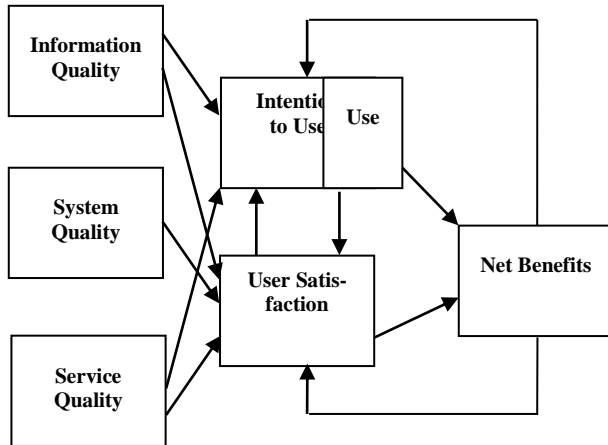


Fig. 1. DeLone and McLean's IS Success System [11]

Several initial hypothesis can be created from model DeLone and McLean as follows:

- H1a. Information quality will have a positive impact and significant toward use
- H1b. Information quality will have a positive impact and significant toward user satisfaction
- H2a. System quality will have a positive impact and significant toward use
- H2b. System quality will have a positive impact and significant toward user satisfaction
- H3a. Service quality will have a positive impact and significant toward use
- H3b. Service quality will have a positive impact and significant toward user satisfaction

Furthermore, after information quality, system quality and service quality already obtained, the relations between intention to use toward user satisfaction and net benefits will be analyzed with below hypothesis:

- H4a. The use will have a positive impact and significant toward user satisfaction and vice versa
- H4b. The use will have a positive impact and significant toward net benefit
- H5a. The user satisfaction will have a positive impact and significant toward net benefit
- H6. Net benefit will have a positive impact and significant toward use and user satisfaction

The validity test was performed by using Pearson Correlation

$$r = \frac{n(\sum xy) - (\sum x)(\sum y)}{\sqrt{[n\sum x^2 - (\sum x)^2][n\sum y^2 - (\sum y)^2]}} \quad (1)$$

Remarks :

- r xy = The correlation coefficient is sought
- x = Total item score
- y = Amount of total score (all of item)
- n = Number respondent

While reliability test was performed by using Cronbach Alpha formula

$$ri = \left(\frac{k}{k-1} \right) \left(1 - \frac{\sum \sigma_b^2}{\sigma_t^2} \right) \quad (2)$$

Remarks:

- ri = Instrument reliability
- k = Total Question
- $\sum \sigma_b^2$ = Number of grain variants
- σ_t^2 = Total Varian

III. RESULTS

Validity test conducted by Pearson Correlation (formula 1). The result showed that all data were valid. Reliability test was measured by formula (2) by Cronbach Alpha. The result in Table 1 showed that the value of r count > r table (0.6), therefore, data were declared reliable.

TABLE I. THE RESULT OF RELIABILITY TEST

Variables	Cronbach Alpha	Interpretation
Information quality	0.847	Reliable
System quality	0.894	Reliable
Service quality	0.764	Reliable
Intention to use	0.682	Reliable
User satisfaction	0.818	Reliable
Net Benefit	0.860	Reliable

The result showed in table 2 as follows:

- 1) Hypothesis H1a is acceptable with t statistic 5.480 > 2.627 t table with df (n-k) = 90 – 6. Information quality influenced use significantly.
- 2) Hypothesis H1b is acceptable, with t statistic 6.057 > 2.627 t table with coefficient value 0. Information quality influenced user satisfaction significantly.
- 3) Hypothesis H2a is acceptable, wherein t statistic 5.390 > 2.627 t table with coefficient value 0. System quality has significant influence toward use.
- 4) Hypothesis H2b is acceptable, wherein t statistic 7.832 > 2.627 t table with coefficient value 0. System Quality has significant influence toward User Satisfaction.
- 5) Hypothesis H3a is acceptable, wherein t statistic 7.212 > 2.627 t table with coefficient value 0. Service Quality influenced use significantly.
- 6) Hypothesis H3b is acceptable, wherein t statistic 7.184 > 2.627 t table with coefficient value 0. Service Quality influenced User Satisfaction significantly.
- 7) Hypothesis H4a is acceptable, wherein t statistic 5.492 > 2.627 t table with coefficient value 0. Use influenced

User Satisfaction significantly and vice versa. U and US has positive interaction.

- 8) Hypothesis H4b is acceptable, wherein t statistic $3.374 > 2.627$ t table with coefficient value 0. Use influenced Net benefit significantly and vice versa. U and NB has positive interaction
- 9) Hypothesis H5a is acceptable, wherein t statistic $3.374 > 2.627$ t table with coefficient value 0. User Satisfaction influenced Net benefit significantly and vice versa. US and NB has positive interaction
- 10) Hypothesis H6 is acceptable, wherein t statistic $3.374 > 2.627$ t table with coefficient value 0. It means Net benefit influenced Use significantly. In addition net benefit also influenced user satisfaction with t statistic $6.449 > 2.627$ t table with coefficient value 0. It means Net benefit influenced User Satisfaction significantly.

TABLE II. THE RESULT OF T TEST

Variables	T Statistics	T table 95%	T table 99%	Remarks
Information quality (IQ) to use (U)	5.480	1.984	2.627	Significant on level 99%
Information quality (IQ) to user satisfaction (US)	6.057	1.984	2.627	Significant on level 99%
System quality (SQ) to use (U)	5.390	1.984	2.627	Significant on level 99%
System quality (SQ) to user satisfaction (US)	7.832	1.984	2.627	Significant on level 99%
Service quality (SEQ) to use (U)	7.212	1.984	2.627	Significant on level 99%
Service quality (SEQ) to user satisfaction (US)	7.184	1.984	2.627	Significant on level 99%
Use (U) to user satisfaction (US)	5.492	1.984	2.627	Significant on level 99%
Use (U) to net benefit (NB)	3.374	1.984	2.627	Significant on level 99%
User satisfaction (US) to net benefit (NB)	6.449	1.984	2.627	Significant on level 99%
Net benefit (NB) to use (U)	3.374	1.984	2.627	Significant on level 99%
Net benefit (NB) to user satisfaction (US)	6.449	1.984	2.627	Significant on level 99%

Table 3 showed the percentage of influence of one indicator to another indicator according to De Lone and McLeans's IS Model system. The percentage numbers were obtained through regression linear analysis. The percentage number indicates how extent variable interaction in IS success system to make entrepreneurship education more effective and ultimately creates students with high entrepreneurial intention.

TABLE III. THE PERCENTAGE OF THE INFLUENCE OF EACH INDICATOR

Indicator	Percentage
Information quality (IQ) to use (U)	23.5 %
Information quality (IQ) to user satisfaction (US)	27.2 %
System quality (SQ) to use (U)	22.9 %
System quality (SQ) to user satisfaction (US)	38.5 %
Service quality (SEQ) to use (U)	34.7 %
Service quality (SEQ) to user satisfaction (US)	34.5 %
Use (U) to user satisfaction (US)	23.5 %
Use (U) to net benefit (NB)	10.4 %
User satisfaction (US) to net benefit (NB)	29.8 %

IV. DISCUSSION

Entrepreneurship education is need special attention since it is in particular become one of the critical factor in distinguishing entrepreneurs from non-entrepreneur [15]. The result depicted in Table 2 and 3 confirmed the previous researches that IT system in entrepreneurship education effective to be applied. The effective entrepreneurship education in the turn will enhance entrepreneurial intention [15]. From the result on Table 2 and 3, in which all measured variables influenced each other significantly, it can be concluded that there is need a comprehensive and well integrated system to make effective IT-based entrepreneurship education in university.

From table 2, it can be described each result of measured variable:

- The IQ has 23.5% influence and significant by 5.480 toward U. The information quality generally incorporated into user satisfaction, thus there were not found much standalone research about IQ. This research confirmed a previous study of Halawi et..all (2007) that described the significant influence of IQ toward use [16].
- The IQ has 27.2% influence and significant by 6.057 toward US. The prior study stated that high levels of trust and satisfaction of the customers (US) has a strong correlation with accurate, well-integrated and consistent Information Quality (IQ) [16, 17].
- The SQ has 22.9% influence and significant by 5.390 toward U. The result was in line with the previous study which described system quality (SQ) had a significant impact on the perceived ease of use (U) [18]
- The SQ has 38.5% influence and significant by 7.832 toward US. The prior research of Lee (2010) demonstrate that user satisfaction in e-learning has the most significant effect on user's continuance intention. The result of the research confirmed SQ influenced US, that finally heading to the students intention for using IT on entrepreneurship education [19].
- The SEQ has 34.7% influence and significant by 7.212 toward U. The prior research stated that the Service Quality of IS has become the most influential variable toward organizational performance [Gorla]. There is only little research found linking service quality and use. A study examining this relationship between service quality and use stated that the higher IS service quality then the higher intention to use IS.[20]
- The SEQ has 34.5% influence and significant by 7.184 toward US. The result confirmed the prior study indi-

cates that high service quality can result in achieve high customer satisfaction, and ultimately leading to consumer retention [20]

- The U has 23.5% influence and significant by 5.492 toward US. The previous research stated that if U factor increased then US also increased. The frequent use indicated satisfaction of the user. [21]
- The U has 10.4% influence and significant by 3.374 toward NB. There was not found so many literature concerning the relationship between U and NB. From the result, it can be concluded that the frequency of use of the IT system will increased because of the experience in obtaining the benefit of the system.
- The US has 29.8% influence and significant by 6.449 toward NB. The prior research showed the relationship between NB and US. Positive net benefits (NB) will strengthen user interest to wear system, and strengthen user satisfaction (US) [21].

From the table 3 we can analyze that :

- The result was in line with the prior research stated that information quality of IT system is very crucial to make people believe to the effectiveness of system [22]. In order to make entrepreneurship education more success, its need to make considerable change in the process of learning [5]. Adapting technology in university education is critical importance to respond global change in digital competition [23]. Concerning to that, the significant information quality covering accuracy, timelines, completeness and format showed the high intention to use and the high user satisfaction of IT. In terms of entrepreneurship education the significant influence of IQ showed that IT bring more value and beneficial for the success of education. For example, the announcement that is submitted through on-line system can ease the student to obtain fast and accurate information concerning task, score, and lectures material.
- SQ covering the quality of hardware and software in IS. According to DeLone and Mc Lean (2016), it is referring to the ability, policy and procedure of IS in providing information according to the need of users [23]. The result confirmed the prior study of N Gorla, Somers and Wong (2010) that showed SQ has major implication on IS success and important for organizational performance [24]. From the SQ result in table 3, it can be concluded that the more high SQ the more high system using intensity. The re-use of the IS can be interpreted that IS beneficial for the user. In terms of entrepreneurship education, it means the use of IT is indicated beneficial for the students and lecturer. The significant SQ means that the students can access the information flow and lectures material faster and easier. Additionally, it increase the effectiveness of entrepreneurship education.
- Chung and Skibniewski, (2007), stated that SQ is included in dimension of IS system success, given its support, especially in the e-commerce where is customer service is very important [25]. The significant SQ indicated the perspective of the users and need to meet or exceed the expectation of the user [26]. The role of IS that becomes more important make the SQ in IS need to

be increased. According to D&M (2003), there are 3 components that influents service quality such as assurance, system empathy, system responsiveness [22]. In entrepreneurship education, significant SQ means that IT system can meet the expectation of students in entrepreneurship class. Additionally, measurement of SQ helps to make improvement planning in IS to support education that is more effective.

- User satisfaction dimension in Table 3 also showed significant value. The significant value of US indicates high respond and feedback of the user after use the IS [22]. The students accept the information submitted through system in entrepreneurship class quicker. The information submitted through system is more effective due to the high number of the students in entrepreneurship class. Communication between students and lecturer going smoothly. The easiest to use the IS creates the high user satisfaction. The prior studies indicated that the success of IS referring to the user satisfaction [27]. In the field of education, according to A Y Al-sabawy el. All (2011) user satisfaction has been considered as a measurement to assess IS success in e-learning [28].
- The result indicated the high intention to use IS in entrepreneurship class. The intention of the students and the lecturers including the amount of use , frequency of use, nature of use, appropriateness of use, extent of use, and purpose of use [22]. The highest IU the highest degree of students and lecturer in utilizing IT in entrepreneurship class.
- The significant NB indicated that the users including the lecturers and students got the benefit after using the IS. The measurement of NB was performed by using perceived usefulness including speed of accomplishing task, job performance, effectiveness, ease of job, and usefulness in work [22]. The result of NB measurement illustrate that the use of IT can speedy the student to accomplish the task and make the lecturers easier in their job to give the information, lesson, etc.

V. CONCLUSION

The finding of the research conclude that Information Quality, System Quality, Service Quality, Use, User Satisfaction and Net Benefit influenced the success of IT application in entrepreneurship education. IT can be utilized to make entrepreneurship education more effective, which ultimately emerge the entrepreneurial intention of the student. The finding of the research contribute reference for shifting conventional entrepreneurship education to technology based entrepreneurship education in university.

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