

THE DEVELOPMENT OF NEW WEBSITE FOR ENTREPRENEURSHIP EDUCATION: UNDERSTANDING USER REQUIREMENTS

Saravane Phungpunum, Chulalongkorn University, Thailand
KrerK Piromsopa, Chulalongkorn University, Thailand
Noawanit Songkram, Chulalongkorn University, Thailand

ABSTRACT

Writing business plans is regarded as one of the critical platforms of entrepreneurship, and it has increasingly become pertinent in the core activities of higher education since the students are required to write business plans for their innovative products. In this study, a collaborative website namely BRAINY Business Plan Website (BBP) has been proposed.

Prior to the website development, it is crucial for software engineers to investigate user requirements. This study is a mixed method in nature; 432 undergraduates (third-year and fourth-year students from 11 universities in Thailand), have responded to the questionnaires, whereby the researcher seeks to gain the in-depth findings from a focus group interview. The quantitative data were analysed in the SPSS program with descriptive statistical techniques. More than half of the participants reported that they had experience in studying or writing a business plan. In terms of various contents in websites, the users expected to browse and to use the websites for free at the highest level (Mean=4.375, S.D.=1.003), followed by clear instructions in writing a business plan, secure system when logging in, and a clear description of user access right. The findings from the interview also supported that all participants (11 undergraduates) had experience in a competitive business plan contest and were interested in using a business plan website. The results also pointed to the needs of free access of the websites, clustered security system, and short videos as multimedia.

The highlight of this system is the addition of tools that help students to become creative in their search for innovation using TRIZ. The TRIZ tool provides a logical approach to develop creativity for innovation and problem solving.

Keywords: Website, User Requirements, Entrepreneurship Education, Business Plan, Higher Education, Mixed Method Study.

INTRODUCTION

Thai universities, focusing on science and technologies, conduct much research regarding innovative and creative products. Several of these universities have set their target to become entrepreneurial universities. Therefore, the university should provide entrepreneurship incubation for the students to have direct experience through outside classroom activities, which have been proved as an advantage for the learning process (Nanda et al., 2014). Activities related to being entrepreneurs have been designed for higher education students in both in-class and out-of-class activities, particularly for students who want to change their ideas into products to become intellectual properties leading to commercial scale production. One popular out-of-class

activities is a business plan contest (Ross & Byrd, 2011). A business plan contest is a very beneficial tool to create and to enhance creativity and innovation (Li, 2003).

This research aims at designing and constructing one of the platforms to assist learners in designing and writing their business plans to fully express and promotes their skills of being an entrepreneur. Previous studies have found that entrepreneurial education has a positive effect on entrepreneurial intention (Barba-Sánchez & Atienza-Sahuquillo, 2018). The business plan can transform a technology idea to the commercial domain through online means, namely the BRAINY Business Plan Website (BBP).

With so many radical changes in the age of disruptive technology, learning and teaching technology has rapidly evolved also, especially computer and internet technology, which provides new channels in learning and instruction. Paper-pencil practice is not as interesting and inspiring as interactive media; therefore, this research presents online learning.

The new generation of student has a different lifestyle thoroughly dependent on digital technology development. In 2018, the Electronic Transactions Development Agency of Thailand revealed in a study of the behavior of internet users that Gen Y Thai citizens (age 18-37) were the group with the highest use of internet for 4 consecutive years with a daily average of 10 hours 5 minutes (Electronic Transactions Development Agency, 2019). Moreover, the purpose of this research can support the country's policy on ICT to encourage smart Thailand society by employing ICT as a pillar in education to construct a knowledge-based economy (Panjaburee & Srisawasdi, 2018).

Universities should be aware that traditional classroom instruction is not sufficient to develop knowledge and skills of learners. With the rapid development of information systems and internet technology, more and more faculty through their use of educational innovations, can step over the boundaries of traditional instruction (The & Usagawa, 2018). In addition, past research shows that students have a positive attitude towards distance learning (Akhmetshin et al., 2019). This technology storm helps students participate in active learning environment autonomously and increase the cognitive capacities of students (Pet'ko et al., 2020)

Before the construction of this website, user requirement investigation is a necessary step to develop the website. The system analysts would collect the user requirements or customer requirements to define the possibility of the project, and learners are determined as the biggest users of e-learning (Zamzuri, Manaf, Yunus, & Ahmad, 2013).

The objective of this research is to investigate user requirements to develop an e-learning system for defining collaborative features required by the users (Business Administration Students) for an online collaboration tool for innovative business plans, which will then be used to construct the prototype.

The overall of a research aims to develop a website for writing a business plan that support innovation for undergraduate students. It will be helpful in designing and developing an effective learning website for the students, which is considered one of the key tools that can drive traditional universities towards becoming an entrepreneurial university.

LITERATURE REVIEW

The Importance of Business Plan Activities

Business study is facing the challenge of the age of disruptive technology changing the world to be a global village. Thus, learning and education must be based on the skills development for the new economy. Research has found that apart from academic knowledge, the

required skills for business administration students are entrepreneurial skills and innovations (Van der Colff, 2004). Learning activities related to entrepreneurial skills have been selected and designed to suit the requirements. One of the activities is a business plan contest aiming at encouraging new start-ups. The contest is beneficial for the participants especially developing entrepreneurial skills, accessing the experts in the field, gaining opportunity and networking, including developing self-confidence and risk acceptance. Thus, entrepreneurial study should be managed by learning-by-doing through project-based instruction (Wilson, 2008).

All over the world the increasing importance of encouraging entrepreneurial skills and innovation as tools has been shown to boost the economy. In Thailand, several universities have set up business plan contests through specialized institutes: e.g., Chulalongkorn University has its Innovation Hub; the Institute for Innovation Learning was established by Mahidol University; the College of Innovation by Thammasat University; and the National Innovation Agency, through which the government sector organizes business contests annually. At the beginning, the purpose was to encourage the students to write business plans for being a start-up. It was found, however, that writing business plans yields wider benefits including developing entrepreneurial skills, building teamwork skills, and increasing self-confidence, in addition to learners gaining more skills in risk taking (Russell et al., 2008).

Related literature and research have shown that entrepreneurial study has had a significant effect on encouraging the attentiveness of students and supporting the intention of those who want to become entrepreneurs. The development and implementation of computer innovation based on knowledge management, informal learning, and learning community theory can stimulate entrepreneurial study in the bachelor's degree (Ji, 2017). Moreover, entrepreneurial study can be in the form of transferring the values, spirit, new business model, and entrepreneurial behavior including interpersonal relationship skills (Sang & Lin, 2019).

Creativity Tools: TRIZ

There are many tools that help create creativity such as mindmaps, six thinking hats, random words, SCAMPER including TRIZ. Triz is the abbreviation from the Russian language “*Teoriya Resheniya Izobretatelskikh Zadach*” which corresponds to the English language “*Theory of Inventive Problem Solving*” thought by Genrich Altshuller in 1946. He believes that creativity for problem solving can be studied and learned.

There has been past research applied the TRIZ tools for business and management problem solving and ideas generation to innovatively modify existing business models or to design new, innovative business models for a specific market or industry (Souchkov, 2010). Research found that TRIZ easy to use in training undergraduate students (Nakagawa, 2011).

There is an experiment using TRIZ in teaching at university. The results showed that the groups of students that use TRIZ have a problem solving self-efficacy significantly more than the four years students who did not use it (Belski et al., 2013). From survey, the majority of the respondents applied TRIZ in technology-oriented fields and 24% of respondents applied TRIZ to business management field (Ilevbare et al., 2013). And one of the entrepreneurship training programs showed that TRIZ can significantly help in finding innovative technical solutions that are otherwise very difficult to obtain (Riel et al., 2015).

Moreover, past research found that TRIZ has a strongly positive effect on a student's ability to analyze problems, and to generate, select, and execute a strategy. TRIZ also increased the creativity with which students designed products, including their ability to develop and

implement novel ideas. Based on these results, suggestions for teaching practices and future studies are proposed (Chang et al., 2016).

The Importance of Investigating User Requirements of the Website

On delivering web-based projects, 84% of the problems were that they do not meet the user requirements (Ginige & Murugesan, 2001). The system analyst will collect the requirements of the customers or users to define the probability of the project by considering cost and budget, preparing resources, making a timeline, and setting up team to proceed with a website project. Barry & Lang (2001) revealed that there has been difficulty in developing software incorporating more needs to develop and deliver high quality web-based software under a set budget and in a set schedule. They found that the solution was employing a user-centered approach that transfers requirements of users to system presentation.

Before website design and construction, it is crucial to find user requirements due to the fact that in the circle of qualified software development, defining effective software requirements is one of the important challenges (Tiwari et al., 2012).

The software development lifecycle is a methodology for designing, building, and maintaining information and industrial systems (Alshamrani & Bahattab, 2015) in several forms. One of them is the waterfall model or document-driven model, which starts from requirements gathering. Understanding user requirements is an integral part of information systems design and is critical to the success of interactive systems.

RESEARCH METHODOLOGY

Research Process

The research objective is to find user requirements to develop BBP website using mixed method study, which employs both quantitative and qualitative methods in data collection to gain a more complete answer to the research questions (Teddlie & Tashakkori, 2009). The data collection process was conducted through both questionnaire administration and focus group as shown in Figure 1.

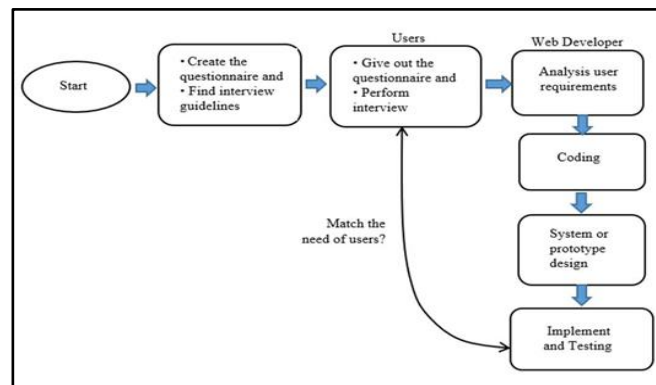


FIGURE 1
RESEARCH PROCESS

User Group

The target group or population for the website implementation was the bachelor's degree students studying in the level of the third and the fourth year in the field of Business Administration or Management in research universities and specialized universities of science and technology in 11 universities in Thailand, i.e., Chulalongkorn University, Mahidol University, Thammasat University, Kasetsart University, Prince of Songkhla University, Khonkaen University, Chiangmai University, King Mongkut's University of Technology Thonburi, King Mongkut's University of Technology North Bangkok, and King Mongkut's Institute of Technology Ladkrabang in the academic year of 2561 BE (2018) with the total population of 7,818 students.

RESEARCH RESULTS

Quantitative Measure: Questionnaire Responses from Sample Group Survey

From the population, the sample group was delivered through stratified random sampling technique and proportional allocation. The number of the sample group was defined by the Krejcie and Morgan with the error of approximation level of ± 5 with the total number of 400 students.

The research questions are related to personal background information and the level of the requirements on the characteristics of BBP website. The questionnaires were trial for the reliability with the Cronbach's alpha value at 0.922 higher than the criteria of 0.7. The questionnaires were distributed to 432 students with the results shown in Table 1 and Table 2 below.

The categories of requirements according to Seven Goals for Usability (Aoyama, 2007) are shown in Table 2.

General Background information	Number	Percentage
Gender		
Male	122	28.24
Female	310	71.76
Average age (year)		21.58
Level of study		
Third year	128	29.63
Fourth year	296	68.52
Higher than fourth year	8	1.85
Experience in internet using		
Less than 3 years	2	0.46
3-6 years	48	11.11
7-10 years	156	36.11
More than 10 years	226	52.32

Experience of using learning media on websites		
Yes	402	93.06
Never	30	6.94
Experience in writing business plan		
Yes	246	56.94
Never	186	43.06
Total	432	100

S. No.	Goals	Questionnaire Items	Mean	SD	Requirement Level
1	Favourability	Attractive design with modern and interesting homepage	4.296	0.963	The highest
		Accessible to all users with no cost	4.375	1.003	The highest
2	Usefulness	System possesses tools to construct innovation	4.102	0.845	High
		Note-taking system in various forms , e.g., filling in table, space, etc.	3.984	1.031	High
		System with table for filling, e.g. SWOT (Strength, Weakness, Opportunity and Threat) table	4.225	0.931	The highest
3	Credibility	Security system, log-in, and defining the authority in accessing user's information	4.299	1.012	The highest
4	Operability	System with timely error handling	4.252	0.928	The highest
5	Understandability	System with user friendly manual and easy to understand	4.356	2.671	The highest
		System with clear and organized steps in business plan writing	4.292	0.877	The highest
6	Readability	System with examples of business plan articles	4.199	1.002	High
		Multimedia system such as videos, messages, pictures, etc., in various topics, e.g., marketing, finance, management	4.238	0.932	The highest
7	Responsiveness	System with the level evaluation and grading on the innovation	4.123	0.865	High
		System possesses communication channel with experts for Q&A	4.077	0.999	High
		System with easy navigation to continue the next steps	4.051	0.95	High

Qualitative Measure from Focus Group Session: User Comments

The researcher designed the qualitative method through focus group interview which yields advantages on two-way communication as face-to-face with informal atmosphere (Acocella, 2012). On the ethical considerations, all participants were over 18 years old and volunteered to join the four-group discussion anonymously.

The aspects in focus group interview were in the form of semi-structured questions categorized on the question types (Deliens et al., 2015)

Analysing the Focus Group

The interview in the focus group was conducted by the moderator with sound recording in the conference room of the Faculty of Business Administration, King Mongkut's Institute of Technology Ladkrabang for 3 hours on the date and time suitable for the students and the researcher.

The results from the focus group showed that the 11 participants in the focus group consisted of 9 males and 2 females studying in the third year of the BBA program. They all had experiences in business plan study and other related subjects such as marketing, finance and management. They have joined the contest in business plan writing at the faculty level. One of the participants won the first prize award. The analysis of the focus group interview can be categorized as follows.

1. Searching for Innovation

One of the male students answered: *"the teacher told us to start from the problem and make it different from the previous ones"*. The students then searched for the innovation in the internet.

The focus group discussion comprised representatives of 5 groups with the innovation as follows.

- a. Website to help SME for online products and dealing with stock inventory emerged from the hotel room inventory management.
- b. Mosquito repellent shirt was derived from the research in the internet.
- c. Pet grooming and vaccination delivery services.
- d. Alarm clock that helps deep sleep and wake up on time.
- e. Herbal ice cream.

The students did not get the idea from trend such as age, society, healthcare, or digital economy but they knew some of those trends.

2. Process in Writing Business Plan

Business plan writing is a part of the subject 'Business Administration Seminar'. The lecturer told them to work in a group of 9 for one month on a report containing one innovation product and a business plan. The report comprises 3 main parts:

- a. Marketing analysis and SWOT 7P 5 Forces model,
- b. Operation plan analysis on HR, raw materials, and production and
- c. Financial analysis on the breakeven point, financial statement, capital, cost, etc.

The students had opinion that it was interesting to have website for business plan writing. *"This website might help us write business plan faster"*, one of the students said.

The lecturer taught on the components of a business plan.

3. Experience in Business Plan Contest

Every group had joined the business plan contest. The lecturer of the subject 'Business Administration seminar' told the students that the Faculty of Business Administration and Management set up a business plan contest called the Business Battle and suggested the students to join this contest. The referees were the faculty staffs such as the dean, the assistant dean, and lecturers. *"Apart from the lecturers, I'd like to referees from outside such as well-known business people, start-up, investors, financial fund, etc"*. one of the male students said.

4. Collaborative Work

Students taking this subject were their classmates. They shared work by drawing lots on topics and started searching the innovation from Google on their interested research. They agreed with the phrase "Innovation does not come from individual but from the team". They did not have problem on teamwork but on the project presentation due to limited time. One of the female students mentioned, *"The problems are on the technical terms of that innovation, such as mosquito repellent shirt, how to describe technical terms to their classmates including the price estimate and cost"*.

5. The Functions and Features of the Required Website

The website should be simple and easy to use with outstanding topics. One of the male students mentioned, "Steps in writing business plan should be well and clear orderly arranged. Information should be easy to find." Another male student added, *"The font must be clear, legible, easy to read but not too wordy with mild color scheme, the color scheme of each page should be harmonious with mobile optimized website"*.

The videos that they like to watch include marketing trend and finance no longer than 3-5 minutes. If the video is too long, it is boring. The videos should be grouped according to the topics. On the question that if the long video of 9 minutes is cut into 3 parts or 3 minutes per part whether the students will watch them, one male student replied suddenly, *"If not compulsory, no continue watching. Only 3-minute watching is enough"*.

On the scoring system, there is a criterion on the possibility of innovation and teamwork but not at a clear level. One of the students asked, *"Who is going to give the scoring?"* In case that they got low score, it was OK for them (some group might not). They said that suggestions and comments are better than scores. Even if they got high scores, they would still like to get comments and suggestions for their future improvement.

6. Website Accessibility

One student said that website usage should be free of charge: *"If you ask me whether to pay or not, I'll say that I don't want to pay. I've seen some foreign websites that cost \$10 when using which might be cheap for foreigners but about 300 baht, which I think, is so expensive. If it is cheaper, I might pay; but the faculty or the institute should subsidize."* One student added, *"If the business plan can further create more value and real business, I am willing to pay for the website"*.

The website should be secured with user registration feature by defining authority of accessibility with group password. Other groups cannot access their group work. One student said, *"If I don't know other groups, I don't want to look at their work. Compared with the real world outside website, if they are my classmates, I'll ask them what their group are doing; but if I don't know them, I don't want to know"*.

DISCUSSION

In order to make business plan activities become accessible for BBA students, the researcher uploaded the activities to the website called BRAINY Business Plan website (BBP website). The study of user requirements is necessary as a starting point to design the website similarly to a waterfall model of which the starting point was also on user requirement investigation as well. For this website, the researcher synthesized the study by using the mixed method. The questionnaires were gathered from 432 Business Administration students, while 11 students joined the focus group. The number of the students in the focus group seems to be a small number, but it is common for this type of study.

Most informants for the questionnaires were female with an average age of 21.58 years old. Most of them were studying in their fourth year. It is interesting to know that more than 50 percent of the informants had experience in using the internet more than 10 years. Moreover, they had experience in using learning media through website with experience in business plan writing. Based on the concept of e-learning acceptance, experience positively affects the beneficial recognition and willingness in continuously using e-learning behavior (Abdullah & Ward, 2016; Venkatesh & Davis, 2000; Wu et al., 2011).

It is noticeable that the findings of the questionnaires are in the quantitative data. The number defines their requirement levels which most of the students rated at high or the highest level. However, in the focus group, the answers were more informatively elaborated with in-depth details. They can then be categorized into three groups: accessibility of the system, user interface and system functions.

1. Accessibility of the System

From the questionnaires, the highest requirement was the freeware website, the website that everyone can access without paying at the average level of 4.375. The information from the focus group discussion yielded the same result that the students were interested in using the website but did not want to pay. They added the idea that the universities should subsidize the cost. However, if they could further their business through the written business plan using that website, they were willing to pay. The result was in line with the research on the barrier of e-learning in universities related to infrastructure and technology dimension with the highest aspect on lack of financial support (Quadri et al., 2017). With the financial support, there will be higher motivation in using an e-learning system.

On accessing the website, the students paid more attention to the security system. The accessibility should be secured while logging-in and should define the authority of accessibility of the users which was the highest requirement at the average level at 4.299. Moreover, the findings from the focus group discussion were congruent because the students were aware that all web-based systems are exposed to computer security threats. This was in line with the research by Dimitracopoulou & George who found in their research that e-learning users urgently needed protection of their personal data. (May et al., 2012).

2. User Interface

The students reported their requirements for an appealing design of the website and the interest of the homepage at the average of 4.296 at the highest level followed by the feature of clear steps with orderly arrangement of business plan writing at the average of 4.292 or at the highest level. The instruction on the homepage must be clear and easy to understand with the average of 4.356. This result was also supported by the findings from the focus group discussion stating that homepage should be user friendly and easy to find the topics with mild color scheme and not too wordy. This result was congruent with a study observing that the homepage of a website is the gateway through which readers can locate a particular topic or article to read (Yu & Kong, 2016).

3. System Functions

The students required that the website should be optimized with a variety of content such as multimedia system of videos, messages, pictures on the topics of marketing, finance, management at the highest level with the average of 4.238. It is necessary that e-learning must contain teaching media as can be seen in the research on the effect of media richness. It was found that media directly affects the beneficial recognition, construction, and the intention of use in the future. The media with messages, sound, and video resulted on the intention to use at the highest level (Liu et al., 2009). This can be clearly seen that the variety of teaching media can arouse the users to access the website. From the questionnaires and the focus group, the students suggested further that multimedia in the BBP website should not be too long.

CONCLUSION

This mixed method research aimed at finding user requirements for new website for entrepreneurship education namely BBP website, which is a collaborative website that can help students write business plans to enhance their skills of being entrepreneur. From the findings of this study, the website developer tried to develop the website with the features relevant to the students' requirements.

The basic needs of students for this system are similar to other e-learning systems is that the system should have security, have videos that are useful for learning and user friendliness.

But the BBP website has more outstanding characteristics than other business plan websites. The highlight of this system is the addition of tools that help students become creative in their search for innovation. From a questionnaire on the topic of usefulness found that students need tools that help create innovation at a high level (Mean=4.102). And from the focus group's answer that innovation must be sought from many sources such as Google without using creativity tools.

From the literature review, it found that TRIZ can be applied in both innovation and business management fields. Therefore, the system has a tool for enhancing innovation from other study, which is TRIZ that provides a logical approach to develop creativity for innovation and inventive problem solving (Ilevbare et al., 2013). Although TRIZ is an engineering-based tool, if used in addition to business administration fields, it can help create commercial value of TRIZ's innovation.

Apart from the features and characteristics of a system that matches system requirements, the research provides suggestions for faculty or educational institutes on supporting students to use the website. Other useful guidelines include introducing new channels further from the written business plan, e.g., joining national contests with venture capital or business angle, supporting or possessing a business incubator in helping the project to become the business in real life, etc.

According to the expected outcomes, students who are exposed to this website will demonstrate their interdependencies at all levels, and thereby significantly achieve more innovative business plans and motivational enhancement.

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REFERENCES

- Abdullah, F., & Ward, R. (2016). Developing a general extended technology acceptance model for E-learning (GETAMEL) by analysing commonly used external factors. *Computers in Human Behavior*, 56, 238-256.
- Acocella, I. (2012). The focus groups in social research: Advantages and disadvantages. *Quality & Quantity*, 46(4), 1125-1136.
- Akhmetshin, E.M., Kuderova, I.G., Ryumshin, A.V., Gayazova, S.R., Romanova, E.V., & Erzinkyan, E.A. (2019). Entrepreneurial skills development through distance learning. *Journal of Entrepreneurship Education*, 22, 1-12.
- Alshamrani, A., & Bahattab, A. (2015). A comparison between three SDLC models waterfall model, spiral model, and Incremental/Iterative model. *International Journal of Computer Science Issues (IJCSI)*, 12(1), 106.
- Aoyama, M. (2007). Persona-scenario-goal methodology for user-centered requirements engineering. In *15th IEEE International Requirements Engineering Conference*, 185-194.
- Barba-Sánchez, V., & Atienza-Sahuquillo, C. (2018). Entrepreneurial intention among engineering students: The role of entrepreneurship education. *European Research on Management and Business Economics*, 24(1), 53-61.
- Belski, I., Baglin, J., & Harlim, J. (2013). Teaching TRIZ at university: A longitudinal study. *International Journal of Engineering Education*, 29(2), 346-354.
- Chang, Y.S., Chien, Y.H., Yu, K.C., Chu, Y.H., & Chen, M. Y.C. (2016). Effect of TRIZ on the creativity of engineering students. *Thinking Skills & Creativity*, 19, 112-122.
- Deliens, T., Deforche, B., De Bourdeaudhuij, I., & Clarys, P. (2015). Determinants of physical activity and sedentary behaviour in university students: A qualitative study using focus group discussions. *BMC Public Health*, 15(1), 201.
- Electronic Transactions Development Agency. (2019). Thai Internet User Behavior. Retrieved from <https://www.eta.or.th/content/eta-reveals-thailand-internet-user-profile-2018.html>
- Ginige, A., & Murugesan, S. (2001). Web engineering: An introduction. *IEEE MultiMedia*, 8(1), 14-18. doi:10.1109/93.923949
- Ilevbare, I.M., Probert, D., & Phaal, R. (2013). A review of TRIZ, and its benefits and challenges in practice. *Technovation*, 33(2), 30-37.
- Ji, X. (2017). Development and application of computer-aided innovative learning mode of undergraduate entrepreneurship. *International Journal of Emerging Technologies in Learning*, 12(1), 155-167.
- Li, J. (2003). Entrepreneurship education in China. *Education+Training*, 45(8/9), 495-505.
- Liu, S.H., Liao, H.L., & Pratt, J.A. (2009). Impact of media richness and flow on e-learning technology acceptance. *Computers & Education*, 52(3), 599-607.
- May, M., Fessakis, G., Dimitracopoulou, A., & George, S. (2012, July). A study on user's perception in e-learning security and privacy issues. In *2012 IEEE 12th International Conference on Advanced Learning Technologies*, 88-89, IEEE.
- Nakagawa, T. (2011). Education and training of creative problem solving thinking with TRIZ/USIT. *Procedia Engineering*, 9, 582-595.
- Nanda, G., Lehto, M. R., & Nof, S.Y. (2014). User requirement analysis for an online collaboration tool for senior industrial engineering design course. *Human Factors & Ergonomics In Manufacturing*, 24(5), 557-573.
- Quadri, N.N., Muhammed, A., Sanober, S., Qureshi, M.R.N., & Shah, A. (2017). Barriers effecting successful implementation of E-learning in Saudi Arabian Universities. *International Journal of Emerging Technologies in Learning (IJET)*, 12(06), 94-107.

- Panjaburee, P., & Srisawasdi, N. (2018). The opportunities and challenges of mobile and ubiquitous learning for future schools: A context of Thailand. *Knowledge Management & E-Learning: An International Journal*, 10(4), 485-506.
- Pet'ko, L., Popova, L., Kulyk, O., Kardash, L., Ovsiienko, L., Denysiuk, I., & Proskurniak, O. (2020). Web oriented education course design model in the entrepreneurship education system. *Journal of Entrepreneurship Education*, 23(S1).
- Riel, A., Tichkiewitch, S., & Paris, H. (2015). Preparing Researchers for Entrepreneurship Based on Systematic Innovation Training. *Procedia Engineering*, 131, 933-940.
- Ross, L.W., & Byrd, K.A. (2011). Business Plan Competitions: Start-up "Idols" and Their Twenty-First Century Launch Pads. *Journal of Higher Education Theory & Practice*, 11(4), 53-64.
- Russell, R., Atchison, M., & Brooks, R. (2008). Business plan competitions in tertiary institutions: Encouraging entrepreneurship education. *Journal of Higher Education Policy & Management*, 30(2), 123-138.
- Sang, D., & Lin, J. (2019). How does entrepreneurial education influence the entrepreneurial intention of college students: The moderating and mediating effects of entrepreneurial alertness. *International Journal of Emerging Technologies in Learning*, 14(8), 139-157.
- Souchkov, V. (2010). TRIZ and systematic business model innovation. Paper presented at the Global ETRIA Conference 'TRIZ Future, 3-5.
- Teddle, C., & Tashakkori, A. (2009). *Foundations of mixed methods research: Integrating quantitative and qualitative approaches in the social & behavioral sciences*. Sage.
- The, M.M., & Usagawa, T. (2018). Effectiveness of e-learning experience through online quizzes: A case study of Myanmar students. *International Journal of Emerging Technologies in Learning*, 13(12), 157-176.
- Tiwari, S., Rathore, S.S., & Gupta, A. (2012, September). Selecting requirement elicitation techniques for software projects. In *2012 CSI Sixth International Conference on Software Engineering (CONSEG)*, 1-10, IEEE.
- Van der Colff, L. (2004). A new paradigm for business education: The role of the business educator and business school. *Management Decision*, 42, 499-507.
- Venkatesh, V., & Davis, F. (2000). A theoretical extension of the technology acceptance model: Four longitudinal field studies. *Management Science*, 46, 186-204.
- Wilson, K.E. (2008). Entrepreneurship education in Europe. *Entrepreneurship and higher education*.
- Wu, M.Y., Chou, H.P., Weng, Y.C., & Huang, Y.H. (2011). TAM-2 based study of website user behavior-using web 2.0 websites as an example. *WSEAS Transactions on Business & Economics*, 4(8), 133-151.
- Yu, N., & Kong, J. (2016). User experience with web browsing on small screens: Experimental investigations of mobile-page interface design and homepage design for news websites. *Information Sciences*, 330, 427-443.
- Zamzuri, Z.F., Manaf, M., Yunus, Y., & Ahmad, A. (2013). Student perception on security requirement of e learning services. *Procedia-Social and Behavioral Sciences*, 90, 923-930.