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EXPLORING ACCEPTANCE OF GAME BASED LEARNING FROM MALAYSIAN GOVERNMENT PROFESSIONALS' PERSPECTIVES

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Abstract

Project managers need to visualize the project, and effectively learn how to manage it. However, this objective is not fully achievable using conventional learning approach via classroom training. Learning using game is introduced to provide a more interactive and engaging learning environment. A survey was conducted to a group of Malaysian Government professionals, where one of their core businesses is project management, to evaluate their acceptance on this approach based on three specific aspects - perceived usefulness, perceived ease of use and intention to use. The professionals responded positively in the survey even though, they were only explained on the concept of game based learning and not experiencing the actual game. This study is very important as the result of this study encourages the acceptance of game based learning in project management field. Future development on the content of the game is required to ensure effective, efficient and engaging learning is achievable.

Keywords: Project Management Learning, Game Based Learning, Competency, Acceptance.

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1. Introduction

Learning is a continuous process which starts from the day a human person is born until he/she passes away. Through learning ones could gain knowledge and develop skills in order to further enhance his attitudes towards working effectively and efficiently. In a digital era, the process of learning need to be quick and aligned with current technologies, only then, the organization could remain germane and flourish in the construction industry (Serrat, 2017).

1.1. Construction Industry

Construction industry has impacts on our daily life in Malaysia from many different aspects. The closest example will be the infrastructures, such as roads and bridges, we use on our daily commutes to our offices. Other examples include hospital buildings, stadiums, public transportations and etc. Construction industry provides significant contributions to Malaysia's economy (Hussin et al., 2013; PMO, 2015). The total value of construction works reported for the fourth quarter of year 2016 is amounted to RM 32.6 billion. This represents approximately 8.1% higher than the reported total value of the same quarter for the year 2015 (Malaysia, 2017). Henceforth, the need for successful project delivery is imperative. Project manager is the individual who is responsible in ensuring the project objectives are met such as the project is delivered within time, budgeted cost, excellent performance and meeting customer satisfaction (Kerzner, 2009). Project manager needs to apply the knowledge, skills, tools and techniques to ensure project activities are carried out successfully (PMI, 2008). Therefore, it is crucial for the project manager to having requisite competency to manage any given project. Past studies has shown that project manager competency is one of the key factors for achieving project success (Davis, 2014; Nguyen et al., 2004; Yong & Mustaffa, 2012).

1.2. Competency

Competency is related to the organization performance. For this reason, the organization must ensure that project manager has the required competency in order to meet the organization's business goals (Turner, 2014). Competency is derived as the combination of knowledge, skill and attitudes (IPMA, 2006; Turner, 2014). Knowledge and skills could be acquired. Knowledge could be gained through training. Skills could be developed from applying knowledge in daily project activities. In addition, attitude is referred to individual traits that differentiate between an effective project manager and a non-performer (Müller & Turner, 2010). The organization conducts structured training each year to ensure development on project management competency. The learning approach is conducted via classroom training, and in specific occasions, coupled with site visits. Classroom training has the advantage of providing the opportunity for participants to get immediate feedback and obtain work collaboration. However, it is still insufficient as there are issues on limited numbers of participants could include per class, dragging people from their works and does not provide practical experience (BLR, 2016). Site visits, on the other hand, give opportunities for learners to experience real project activities. Nevertheless, it is time limited to which it affects the discovery of all aspects of the project works (Lee et al., 2014).

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2. Problem Statement

2.1. Project Management Learning

Project management is a systematic approach towards achieving project goals whereby the project manager uses his/her knowledge, skills, tools and techniques to manage project processes (Nicholas & Steyn, 2017). It is also a science and art of managing all aspects of any given project which comprises of hard skills and soft skills (Reddy, 2015). The needs for project management are to ensure project are systematically managed, have predictable outcomes, effective use of resources and well documented lesson learned (Mir & Pinnington, 2014). Thus, having project management knowledge and skills are important in executing project successfully. In understanding and thus, achieving project successes, project management competency for those involved in any projects need to be developed. There is no need to develop a project management competency framework, as there are international project management associations who have produced the standard framework for project management, e.g. Project Management Institute, U.S.A. and Australian International Project Management Association (IPMA, 2006; PMI, 2002). These frameworks include the baseline of competency requirements. Both organizations shall issue certification of competence to any project management professionals. Project management learning structure could be tailored according to any framework. Generally, the basic of project management is to understand and apply the project management knowledge areas outlined by Project Management Institute (PMI, 2008). Other competency required will be soft skills, which related to human dimension, e.g. interpersonal skill and leadership.

2.2. Game Based Learning (GBL)

Game is fun. It is entertaining and engaging that it separates an individual from the real world. Game with challenges, risks and meaningful outcomes could become addictive (Garris et al., 2002). Game has goals, specific rules and challenges. These criteria are similar to managing a project whereby there are project objectives, standards and guidelines to follow and managing risks throughout the project. Hence, using game in project management learning provide realistic experience (Aslan & Balci, 2015; Barough et al., 2012; Trybus, 2009). Furthermore, project management game based learning provides risk free environment learning whereby the learners could make mistakes and learn from it. Learn by doing is considered as giving more effective and enduring experience (Lee et al., 2014). On top of that, based on with Edgar Dale's Cone of Learning (Dale, 1969), when a person learns by doing the required task the retention learning rate is 90%. Table 1 illustrates the retention rate against the different learning approaches.

Table 01. Learning Approaches vs Retention Rate

Learning Approaches	Retention Rate
Reading Hearing words (e.g. classroom training or lecture based)	10% of what we READ 20% of what we HEAR
Seeing	30% of what we SEE
Watching a movie Looking at an exhibit	50% of what we SEE and HEAR

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Watching a demonstration Seeing it done on location	
Participating in a discussion Giving a talk	70% of what we SAY
Doing a dramatic presentation Simulating the real experience Doing the real thing	90% of what we SAY and DO

Adapted from Cone of Learning, Edgar Dale (Dale, 1969)

The above studies show that the retention rate for learning approaches reading, hearing and seeing is low because in these approaches the learners are in passive state. In order to acquire knowledge, learners need to participate in a learning environment (Bligh, 1998). Henceforth, the learning approaches which are highlighted in Table 1, is considered as active learning. Active learning approaches push learners to hike level of thinking and stimulate it in conjunction with practical experiences. The link between learning approach and the retention rate has been investigated further by Thomas Lord (Lord, 2007) and similar results are obtained. The result from the Cone of Learning is also in line with the famous philosopher, Benjamin Franklin, who said "Tell me and I forget. Teach me and I remember. Involve me and I learn". In essence, GBL is an active learning which could result in higher retention rate for learners. Therefore, introducing GBL as a tool for project management learning is essential to better enhance project management competency.

3. Research Questions

Effective project management learning requires the combination of theoretical knowledge and application of the knowledge in one training session. The question that desperately needs an answer is how this can be achieved? Online or e-learning is one of the learning approaches that benefited the organization in relations to the number of people could be trained at anytime and anywhere, and subsequently, optimizing the training budget (Wang & Wang, 2009; Yunus & Salim, 2008). Yet, there is declination with regards to this approach due to the e-content quality and engagement of learners over a long period (Ali, 2004). Games are enjoyable (Garris et al., 2002). Thus, it engages an individual for a long period. Game based learning (GBL) is all about delivering learning outcomes in an active learning using game environment (Dzeng & Wang, 2017). Learning using games have been introduced in variety of disciplines, such as science, health and businesses (Boyle et al., 2016). Likewise, using games as learning tools in project management field are still being researched, as developing games to suit one field is rather complicated. Before the game based learning could be realized, it is wise to know whether the Malaysian Government professionals in the construction industry could accept this type of learning approach or not.

4. Purpose of the Study

The objectives of this study are to examine the acceptance of game based learning from three aspects, i.e. perceived usefulness, ease of use and intention to use, and to identify any relationships between these aspects in relations to their attitudes towards project management learning.

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5. Research Methods

5.1. Instrument

A questionnaire is developed to investigate the respondents' perceptions of usefulness, ease of use and intention to use of game based learning approach in project management field. Other data collected from the questionnaire are respondents' demographic and respondents' attitudes toward learning project management. A survey design is used to draw the conclusion on game based learning acceptability. Survey is favored because of the economy of design and quick analysis of data collection (Creswell, 2013). Likert Scale from 1 to 5 is chosen to measure the respondents' perspectives either strongly disagree or strongly agree. Likert Scale is acknowledged as instrument that could quantify people's attitudes. Furthermore, it is easy and versatile to use (Johns, 2010).

5.2. Sample

This study is a pilot study which carried out at one of Malaysia's Government Departments. Professionals from this Department involved either or in technical consultation, project management and maintenance management. The questionnaires were distributed to the professionals during a talk held on project management practice for an international project in Mecca. These professionals were not presented with actual project management game, only the concept of game based learning which is explained in the questionnaire. The questionnaire was distributed by hand and they could ask any question if they have any queries.

6. Findings

6.1. Demographic data

61% of the professionals at the talk have given their feedbacks. The demographics of these professionals are as follow, based on:

- Gender: 51% are female professionals;
- Work disciplines: civil (67%); electrical (10%); mechanical (10%); quantity survey (10%) and architectural (3%).
- Range of age: 23% are professionals between 20 – 31 years old; 56% between 32 – 49 years old and 21% are 50 years old and above.

6.2. Professionals' Perceptions on Game Based Learning (GBL)

Three aspects are considered to evaluate the professionals' perceptions on GBL, i.e. perceived usefulness (PU); perceived ease of use (PEU); and intention to use (IU) (Pituch & Lee, 2006). Descriptive statistics were undertaken to determine the professionals' responses. Table 2 summarizes the percentage of professionals' scores against these three aspects.

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Table 02. Descriptive Statistics of Professionals' Scores against PU, PEU and IU

	Mean	**Scores**	**Percentage**
PU	23.71	12 – 18 21 – 30	22.9 77.1
PEU	22.23	12 – 18 19 – 30	29.0 71.0
IU	18.76	10 – 15 16 – 25	27.2 72.8

As presented in Table 2, professionals' scores on the perceived usefulness range from 12 to 30 with mean of 23.71. The scores from 12 – 18 are categorized as lower level of usefulness whereas scores more than 21 reflect higher usefulness. Since the scores of 77.1% ranged from 21–30, it is obvious to say that the professionals agree that game based learning is useful for project management learning. With regards to ease of use, Table 2 shows that professionals' scores range from 12-30, with mean of 22.23. Scores from 12-18 are indicated as "not perceiving ease of use", whereas scores from 19-30 give "perceived ease of use" indication. Based on Table 2 shown above, 71.0% of professionals believe that the project management using GBL will be easy to use. Next, the result for the item on "intention to use", the scores range from 10-25 with mean of 18.76. The professionals who got scores from 10 – 15 do not have the intention of using GBL. On the other hand, those who got scores from 16 – 25 have the tendency to use GBL. From Table 2, the result shows that 72.8% of professionals have positive attitudes towards using GBL. From the results above, it is important to realize that, even though the professionals were not given a real project management game, they are accepting this type of learning approach. These results are also supported by their comments written in the questionnaires. Some of the written comments are:

- GBL approach will be enjoyable and easy to practice;
- GBL is fun;
- GBL is new thing that could attract people to learn;
- GBL is more interesting;
- GBL is an interactive learning. It is a new method and suitable for new generations.

These comments confirmed the previous studies findings on the advantages of GBL (Aslan & Balci, 2015; Dzeng & Wang, 2017; Lee et al., 2014; Nikolić, 2011).

6.3. Attitudes towards Project Management Learning (APML)

Since GBL is an online learning where the learner could access it anytime and anywhere, it could be classified as "learner centered approach". Thus, the professionals must have positive attitudes in learning project management. Descriptive analysis gives the following results.

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Table 03. Descriptive Statistics of Professionals' Scores against APML

	Mean	**Scores**	**Percentage**
APML	41.27	27 – 30	8.1
		31 – 50	91.9

As illustrated in Table 3, professionals' scores for item that calculate their attitudes towards project management learning range from 27 to 50 with mean of 41.27. The scores from 27-30 indicate the negative attitudes. At the same time, the scores 31-50 represent positive attitudes for project management learning. As there is only 8.1% negative attitude, generally speaking the professionals agreed that project management is important and continuous learning is required.

6.4. Relationships

To identify the relationships between APML, PU, PEU and IU, correlation analysis was conducted. Table 4 depicted the scores from the analysis.

Table 04. Relationships between APML, PU, PEU and IU

	APML	**PU**	**PEU**	**IU**
APML	1	0.536**	0.435*	0.592**
PU	0.536**	1	0.884**	0.742**
PEU	0.592**	0.884**	1	0.804**
IU	0.592**	0.742**	0.804**	1
Mean	41.27	23.71	22.23	18.76
Standard deviation	6.09	4.81	4.59	3.96

Note. ** Correlation is significant at $p < 0.01$; * Correlation is significant at $p < 0.05$

As seen from Table 4, there is a positive and significant relationship between APML, PU, PEU and IU. Comparing the correlation coefficient (r) values, it elicited that there is a relationship between attitudes towards project management learning and the three aspects of GBL acceptance. However, the strength of relationship is only moderate and low, as summarized below:

- The strength of relationships between APML and PU (r=0.536) and IU (r=0.592) is moderate;
- The strength of relationship between APML and PEU (r=0.435) is low.

From Table 4, the highest value of correlation is between PU and PEU (r=0.884), which means that the higher the ease of use of GBL, the more people perceived it useful for project management learning.

7. Conclusion

This study was executed to evaluate the perceptions of Government professionals towards using Game Based Learning (GBL) in project management learning. The project management learning using this learning approach provides an interactive learning experience and available online which give the learner flexibility in learning, i.e. anytime and anywhere. This approach is a new exposure to the Government

professionals. Hence, it is wise to explore further their acceptance of this approach before suggesting it for implementation and execution. Their perceptions were evaluated using three aspects, i.e. perceived usefulness, perceived ease of use and intention to use. A relationship between attitudes towards project management learning and the perceived acceptance aspects was also studied. Based on the collected data, it was found that the professionals perceived that GBL is useful for project management learning. They also concur that GBL is easy to use and have the intention of using it. With regards to attitudes towards project management learning, the professionals show positive attitudes. Since there is a relationship between the attitudes with acceptance of GBL, this contributes to the result of their positive perceptions on GBL. With these perceptions, the study opens an opportunity to create a need for project management game. This learning approach is fun and engaging. Thus, it motivates continuous learning and enhances project management learning and development. As a result, project manager's competency is enhanced. Having a competent project manager is essential for project success. This is the first study conducted on project management learning using game based approach from Government professionals' perspectives. Future venue to further carry out this study is the development of a real project management game and evaluates the acceptability of the game.

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