Factors Affecting Interaction on Moodle: An Empirical Study Based on TAM

Komal Karishma and Krishna Raghuwaiya

The University of the South Pacific, Suva, Fiji
email: komal.karishma@usp.ac.fj

Abstract. In this paper, we looked at the factors that affect students' interaction on Moodle. These factors were assimilated into Technology Acceptance Model (TAM) to explore if the mentioned factors actually affected the actual usage of Moodle. A qualitative method research approach was used to collect data. Students filled in a questionnaire with open ended questions for the purpose of this research. Data was collected and the identified factors were categorized according to the segments of TAM. The factors were divided under perceived usefulness, perceived ease of use, attitude toward using and behavioral intention to use. It was found that the factors did have an effect on students' interaction on Moodle.

Keywords: e-learning, interaction, Moodle, TAM.

1 Introduction

With the emergence of e-learning in the teaching learning process, the use of technology is undebatable. E-learning is technology-enhanced learning. It is a shift from traditional (face-to-face) classroom to a virtual classroom. Learning Management System (LMS) have been introduced to accommodate the shift to a VIRTUAL Learning Environment (VLE).

Virtual classrooms are set up and teaching is facilitated online. However, all these would be futile if students do not interact on Moodle. Student interaction on Moodle has been investigated by many researchers. All dimensions of this have been explored to enhance the teaching learning process that is facilitated by Moodle or any other LMS.

Similarly, this paper will explore the factors that affect students' interaction on Moodle. These factors have been identified by LLFXX students in the questionnaire given to them. These factors identified by the students are then matched with Technology Acceptance Model (TAM) [4], [7]. This will reflect how TAM incorporates the factors identified by the students.

The research was conducted at Foundation level (Pre degree) on one of the mandatory English courses at a tertiary institute in Fiji. The institute offers courses to students from Fiji and other countries.

At the institute, courses are offered through either Blended, Print or Online mode. The presence of Moodle in these courses depends on the modes it is offered in. LLFXX

is offered on both, Blended and Print modes, and therefore, Moodle is used to facilitate teaching and learning. However, the interaction of students on the Moodle platform is debatable. Thus, the purpose of this research is to examine the factors influencing students' interaction on Moodle and to incorporate these factors in TAM.

2 Methodology

The participants for the research were Foundation students from the main campus enrolled in LLFXX. There were a total of 109 students (80 Blended and 29 Print mode) from the Pre-degree program. The factors affecting students' interaction on the Moodle page were investigated with the factors being included with TAM.

The factors affecting students' interaction on Moodle were identified by students in open ended questions [7] in a questionnaire. The questionnaire was prepared in Moodle and the students completed the questionnaire online. The questionnaire was completed at the end of a semester before the Covid-19 pandemic. Therefore, qualitative method of research was used for the purpose of this research.

The ability of qualitative research to enlighten 'processes and patterns of human behavior' [13] cannot be possibly done in quantitative research as they are 'not easily handled by statistical procedures' [3]. It is hard to precisely apprehend the 'experiences, attitudes, and behaviors' through the quantitative approach [5], [13]. However, the qualitative approach enables participants to clarify 'how, why, or what they were thinking, feeling, and experiencing at a particular time or during an event' [5], [13].

This research needs students to answer this "what" in open ended questions. The factors identified by the students were analysed by using the Technology Acceptance Model (TAM). These factors were assimilated into the different categories of TAM.

3 Technology Acceptance Model (TAM)

Technology adoption is when learners embrace an e-learning system. The most widespread theory in the area of information technology is the Technology Acceptance Model – TAM [2].

Since its introduction by Davis [6], Technology Acceptance Model (TAM) is used in research, either in its original or modified form to measure users' acceptance of Information Technology systems [2]. Davis proposed TAM to explain the possible user's behaviour plans when using a technology or an improved technology, because it describes the connections between different components of TAM (the usefulness of a system and ease of use of a system) and the learners' or participants' approaches, aims, and the real use of the system [11].

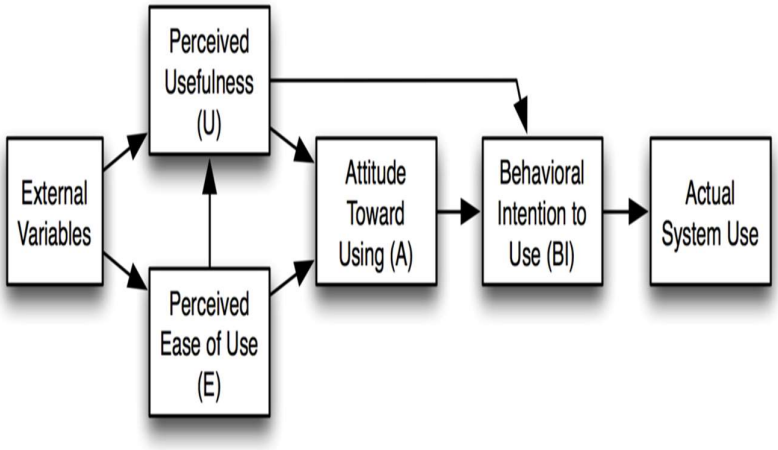

Fig. 1. Technology Acceptance Model adapted from [7]

This information system theory shows user acceptance, adoption, and usability of technology. The motivation of the users of technology is portrayed by three factors: perceived usefulness, perceived ease of use and attitude towards use [9], [12]. TAM is known to be one of the most prominent research models while researching determining factors of information systems/information technology acceptance [4].

The TAM [6], is widely used to describe individual behavior usage involving information technology. It implies that TAM is quite popular in the area of technology acceptance [10]. The principal TAM model is to assist in investigating the effect of external variables that impact the perceived ease of use and perceived usefulness and impact approaches of employing technology and the behavioral aim to utilize technology as the dependent variable [6], [7], [8], [9].

The principal TAM concepts are:

3.1 Perceived Usefulness (U)

U is the degree to which a person believes that using a specific procedure would enhance his or her output [11]. U has been proven as the primary prerequisite for BI amongst the various variables that can possibly affect the application of the system [11]. This paper looks at U as the student being aware of the importance of technology.

3.2 Perceived Ease of Use (E)

E is the degree to which a person believes that using a specific procedure would be easy [11]. It refers to the effort needed by the user to get the benefit of the application [11]. For the purpose of this paper E is the assurance that technology can be used easily or effortlessly and without any complications.

3.3 Attitude towards Using (A)

An attitude is "a summary evaluation of a psychological object captured in such attribute dimensions as good-bad, harmful-beneficial, pleasant-unpleasant, and likable- dislikable" [11]. The learners would most likely substitute the system with a new one if they do not like an e-learning system [1], [11]. The approach of students whilst using technology will be focused on in this section.

3.4 Behavioral Intention to Use (BI)

BI is an indication that an individual is prepared to execute a certain behaviour. It is thought to be an instant antecedent of behavior [11]. A learner's feelings about a system can determine his/her BI [11]. This is the dependent variable which measures the extent to which an individual has devised mindful strategies to execute or not execute some specific potential actions [11]. This component of TAM looks at the purpose of actions of the users known as netiquette in the modern days.

4 Factors Affecting Student Interaction on Moodle

Students (both, Blended and Print mode) were given a questionnaire to fill in. One of the sections required them to identify factors that have affected their interaction on Moodle at Pre-degree level.

4.1 Factors that increased student interaction on Moodle

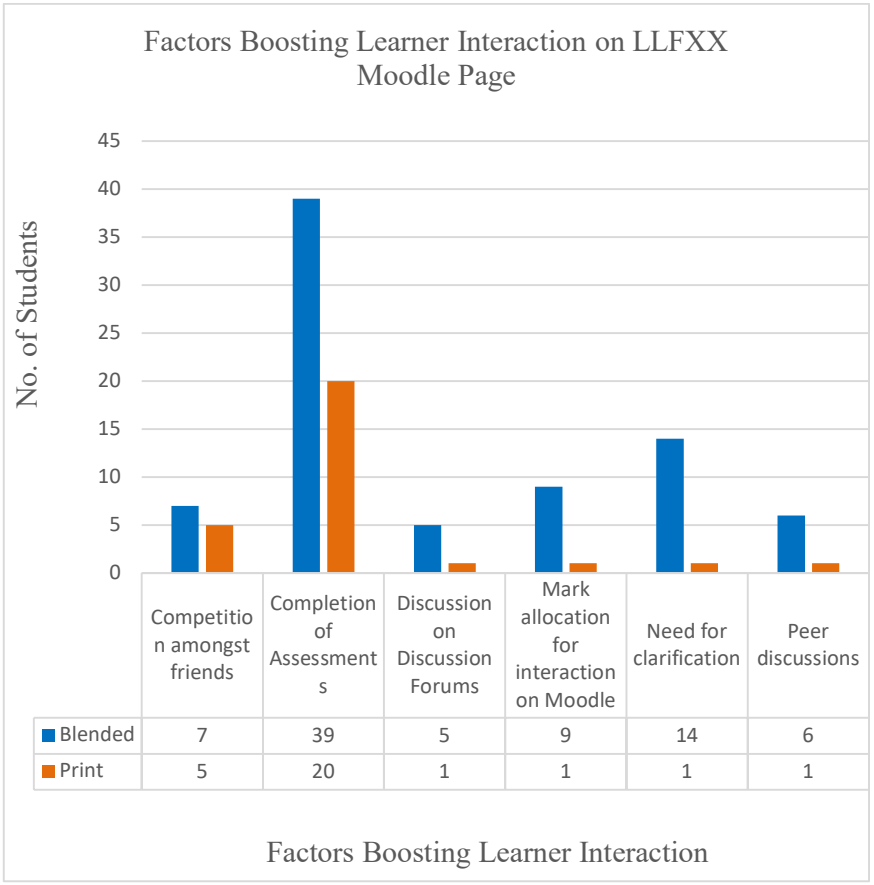

Fig. 2. Factors boosting interaction on Moodle

Figure 2 shows that at the close of the semester, the students enrolled via the Blended and Print mode ensured that they completed all their assessments on Moodle. This boosted their engagement on Moodle. This was 36% for students studying via Blended mode and 18% for students studying via Print mode. Blended mode students accepted that on Moodle, their interaction was the least in forums where discussions occurred (5%). The least common factors to boost interaction for the Print mode students were forums for discussion, allocating marks for student engagement on Moodle, interacting with other users on Moodle to seek clarification and for peer discussions.

4.2 Factors that decreased student interaction on Moodle

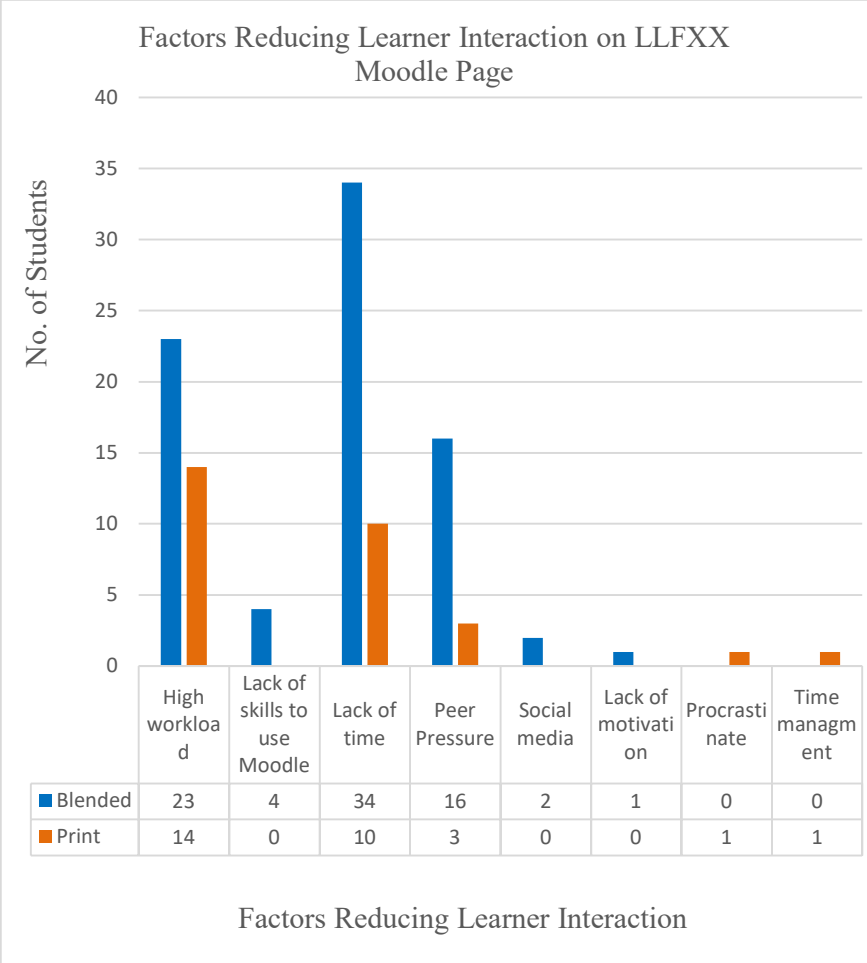

Fig. 3. Factors reducing student interaction on Moodle

Figure 3 depicts that Blended mode students, at the close of the semester, proved that lack of time (31%) was the most common factor that decreased their interaction on Moodle. High workload (21%) and peer pressure (15%) were also notable factors decreasing interaction for Blended mode students. Print mode students, on the other hand, identified high workload (13%) as the most common reason for the decrease in their interaction on Moodle.

5 Factors Affecting Student Interaction on Moodle and TAM

These factors that have been identified by the students in Fig. 2 and Fig. 3 can be categorised under the components of TAM. These reflect or try to explain the reasons for increasing or decreasing student interaction on Moodle.

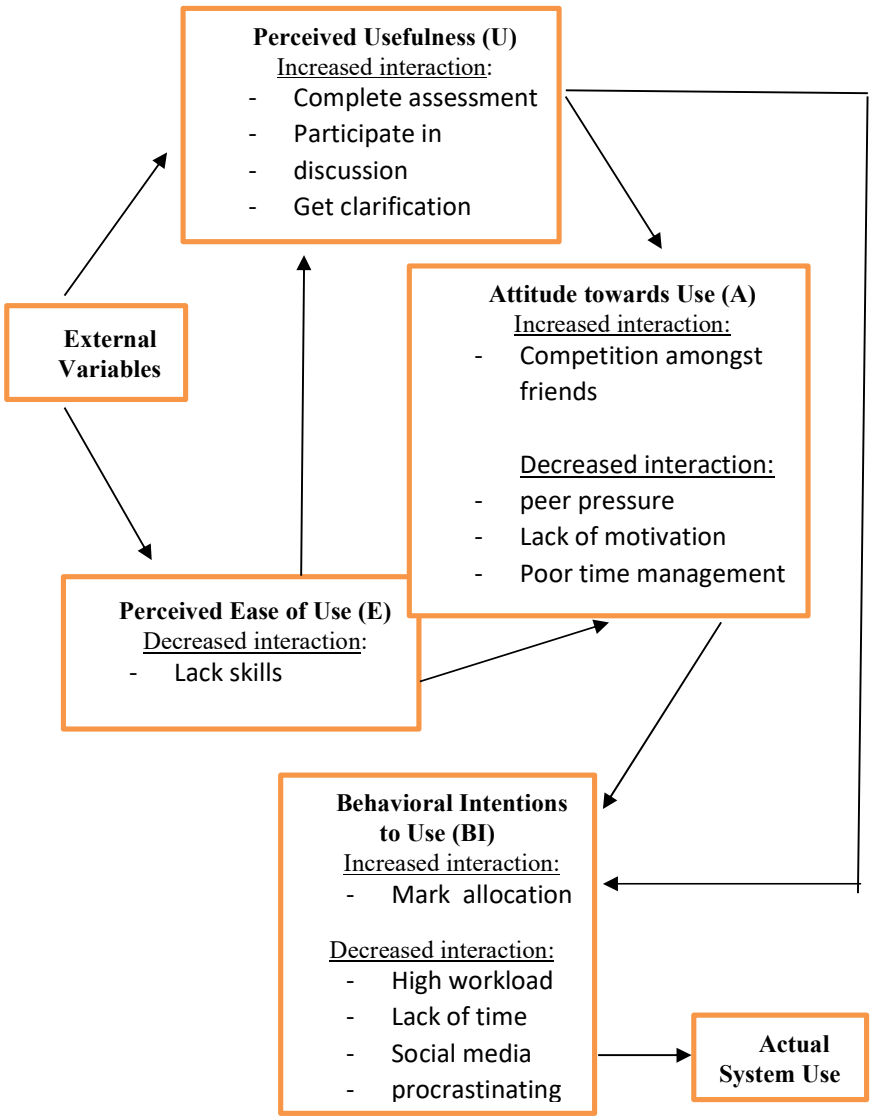

Fig. 4 Factors affecting students' interaction on Moodle tagged in TAM

5.1 Perceived Usefulness (U)

According to the LLFXX students, the reasons for their increased interaction on Moodle were to complete assessment, participate on discussion or online forums and to get clarification when need arises.

5.2 Perceived Ease of Use (E)

Though E emphasises that students feel that technology can be used effortlessly, there are students who lack skills to use Moodle. This results in a decrease in their interaction on Moodle. This is contrasting to what is perceived by technology users about technology and its use.

5.3 Attitude towards Using (A)

The increasing interaction on Moodle is also due to competition amongst friends. This competitive attitude in students increases their interaction Moodle for study purposes.

There are also some factors that are negatively affecting student interaction on Moodle. These factors are peer pressure, lack of motivation and poor time management. These adverse approaches lead to little interaction on Moodle and can lead towards an undesirable final result.

5.4 Behavioral Intention to Use (BI)

Students highlighted that they prefer 'using Moodle more when there is some form of reward like mark allocation for interaction on Moodle'. This encourages them to interact regularly and not when assessments are due.

There are also factors that discourage them from interacting on Moodle. These are high workload, lack of time, social media, and procrastinating. These will lead to poor netiquettes and decreased motivation to interact on Moodle.

6 Discussion

The goal of this study was to identify factors that either increase or decrease students' interaction on Moodle and to integrate these factors with TAM to examine if TAM is practical for pre-degree students.

The findings show that if students are made aware of these factors, then their Moodle use will definitely improve as they could be able to realize the benefits their increased interaction on Moodle will have.

According to the LLFXX students, the reasons for their increased interaction on Moodle were to complete assessment, participate on discussion or online forums and to get clarification when need arises. Since it is mandatory for students to submit all

assessments on Moodle, LLFXX students had to interact on Moodle. Also, it is easier for students to participate in online discussion and seek clarification online if need be.

These reflect that LLFXX students are aware that technology and Moodle is crucial towards their completion of the course successfully.

This becomes more motivating as students feel that technology can be used easily. However, LLFXX students, on contrary, identified lack skills to use Moodle as being a factor for little interaction on Moodle. This re-emphasises the fact that it is not necessary that all technology users come with the same level of skills to use technology and most specifically, LMS, as being Pre-degree students, this is their first exposure to Moodle.

Students' attitude towards using technology also affects their usage of technology. The competitive attitude of students, for example, increases their interaction on Moodle. Competition can be in form of uploading or 'attempting assessments online to get better grade' or thriving to be one of the 'first ones to check marks' (feedback) on assessments. Such competition encourages students positively to interact on Moodle and consequently work towards a better final grade.

Whilst the attitude of students is positively affecting their interaction on Moodle, there are some factors that are negatively affecting student interaction on Moodle. These factors are peer pressure, lack of motivation and poor time management.

Students are easily manipulated by their peers to indulge in activities or groups that are not academically friendly. This deviates them from their focus and 'keeps them away from their studies and Moodle'.

Moreover, there is lack of motivation amongst students to use Moodle. One student mentioned that 'having games will be exciting'. This may motivate them to interact more on Moodle.

Furthermore, poor time management was identified to be a reason for little interaction on Moodle. Since Moodle is a platform that facilitates virtual interaction and there is an absence of face-to-face interaction, students do not find it mandatory to interact on Moodle. Interaction only happens when students find time and have to submit mandatory components like assessments. If students manage their time properly, they would be able to use Moodle more frequently.

Such an attitude leads to a behavioral pattern amongst students. They would interact on Moodle if there were some forms of reward, like mark allocation for interaction on Moodle.

These behavioral patterns can also have negative impact on their way of looking at Moodle and its usage. For example, when students' workload is high, they spend their time meeting assessment deadlines, attending face-to-face class (tutorials, labs and lectures) and participating in group work (face-to-face). This results in students having lack of time to interact on Moodle unless they need to submit assessments.

Also some students are addicted to social media. They 'login to Facebook more than logging into Moodle'. This behavior of theirs distracts them from studies and thus their contact with study related components are little.

Not surprisingly, some students said that they 'keep postponing Moodle during the day'. Such act of procrastinating hinders their chances of interacting with content that

are associated with school. Since schoolwork is postponed frequently, all materials or gazettes containing notes, assessments and revision materials are ignored. Hence, a decreased interaction on Moodle.

7 Conclusion

The factors identified by the students in regard to their interaction on Moodle assimilates quite well with TAM. These factors have reflected the reasons for the actual system, which in this study is Moodle, use. The identified factors were distributed according to Davis TAM [6]. These factors asserted that it is the perceived usefulness, perceived ease of use, attitude toward using and behavioral intention to use that decides the actual usage of Moodle; that is, whether it is used to the maximum or to the minimum.

The manner in which these factors fitted into the model was quite exciting and thought-provoking. It emphasises that if the motivating factors are encouraged and the de motivating factors are improved upon then students' interaction on Moodle (actual system use) will increase.

8 References

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