Influence of MOODLE Module Features on Student Motivation to Use eLearning System

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Abstract
This study explains the MOODLE modules features named as Communication Module, Assignment Module, Course Content Module and Course Delivery Module that motivates students to use eLearning environment. Quantitative empirical research has been conducted on the students who use MOODLE for online learning. The proposed hypotheses are tested on 276 online students. The results of the study shows that student find it fruitful to communicate with other students and teacher using the online communication tools. The module of online assignment submission and grade checking is easy for them. The content and resources uploaded on the eLearning portal are informative and the ease of accessing them with autonomy is very useful. These MOODLE features play as significant predictor for students' motivation to use eLearning system. This study will be significant contributions towards analyzing the features which motivate the students to use MOODLE LMS.
Keywords: *eLearning, MOODLE, MOODLE modules, Student Motivation to use eLearning*

1. Introduction

The dynamic utilization of internet has shifted the educational methodology from traditional to virtual environment. Utilizing the internet facility, eLearning is becoming a popular trend in higher education institutions. Students can electronically communicate with other students and teachers using digital media such as chat sessions, discussion forums and e-mails due to the advantageous features of eLearning.

Digital media has enriched the experience of learning and teaching and has become common learning environment for students and teachers [1, 2]. In the last 10 years, joint efforts have been made by universities to implement eLearning system in institutions as a new learning paradigm. The initiatives in this field have given fruitful results in the form of dynamic course development and ease of learning for distant students [3]. The technological advancement and facilitation in the educational field are also the reasons for successful eLearning implementation. For example,

the introduction of LMS (Learning Management System) like BigBlueButton, Desire2Learn, Sakai, eCollege, Dokeos, WizIQ and MOODLE (Modular Object-Oriented Dynamic Learning Environment) etc [4, 5]. These eLearning systems are flexible enough to be used as a complete education system in virtual environment with dynamic learning facility.

Satisfaction from eLearning, users' behavior towards eLearning is the most studied topics [1, 4-6], however a lack of interest is shown towards LMS modules features. The author has tried to fill this gap in literature and studied the frequently used LMS i.e MOODLE. MOODLE is studied here because of its popularity [7] high rating and large number of active courses in different languages [8, 9]. Most used features of MOODLE LMS are categorized in five categories according to their nature i.e. Communication Module Features (CMF), Assignment Module Features (AMF), Course Content Module Features (CCMF) and Course Delivery Module (CDMF). This study identifies the influence of these modules features on student motivation to use eLearning environment.

The results of this study will be a significant contribution in the field of eLearning and LMS literature. Understanding of these modules will help the institutions to enhance the MOODLE features according to their students' demands and environment.
The primary objectives of this study are to:
1. Develop a model that incorporates MOODLE modules features and their influence towards student motivation to use eLearning system.
2. Validate this model empirically using the survey data from online students.

2. Literature review and research framework

Recently, the popularity of internet has rapidly increased, along with the growing demand for the enhanced digital media and modern methodologies for eLearning system [10]. MOODLE is emerged has the best Web-Based LMS based on Socio-Constructivist Pedagogy [11, 12] to meet the growing demand of eLearning system [13, 14], where educators, administrators, users and designers work together for learners community [15, 16]. Facilities of new digital media integration (presentation features), flexible learning medium and abundant amount of quality information uploaded by field experts [8, 17, 18] and secure login feature with your data privacy [11, 13, 19] significantly influence the users' motivation [13, 20].

The research model proposed in this study incorporates the major MOODLE modules features which are expected to be a relevant predictor of student motivation to use eLearning system. The research model with four modules i.e. CMF, AMF, CCMF and CDMF as a predictor of student motivation is proposed and is shown in Figure 1. The features of each module are discussed below in detail.
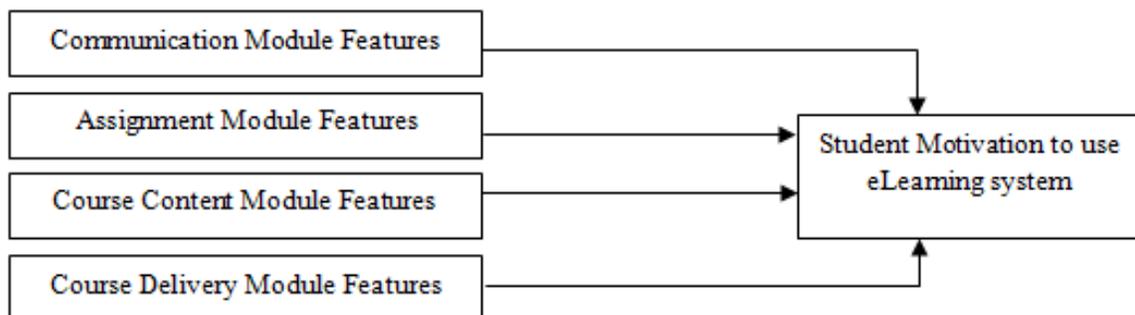

Figure 1. Research Model

2.1. Communication Module

Communication module involves the liaison between student-student and student-teacher. Regular communication among both results in maintaining a social and learning association. This communication would help in knowledge construction and motivate the students to learn and explore the system in a better way. The information exchange among students and teachers about educational content and daily life learning activities are important for learning [21-24]. Timely response by the instructor stimulates the student's motivation to work and to engage in other learning activities available on the online portal [25]. Discussion forums help in building constructive learning environment [26].

This module provides the facility of group work environment with other peer students to exchange knowledge related to the course and develop better understanding of the topic. This constructive learning environment helps the student to build up a useful learning repository [25, 27] and active teamwork participation motivates the student to engage in learning environment [6, 28].
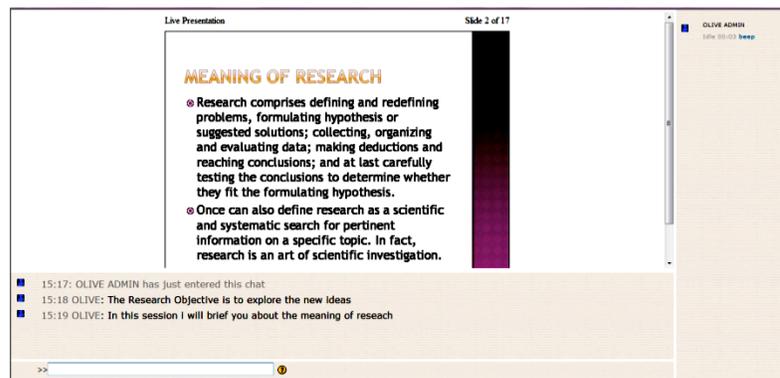

Figure 2. Chat session

The interactive text based chat that includes live presentation is an interesting way of communication [29] which helps the student to engage in active learning process in collaborative learning environment instead of studying alone. Fig. 2 shows the image of MOODLE chat session. This chat session motivates the student to engage in interactive learning activities on eLearning portal.

Hypothesis 1: Communication module feature plays an active role towards student motivation to use eLearning Portal.

2.2. Assignment Module

Student evaluation and grading are the main requirements for any educational system. The Assignment Module provides friendly features for both the students and the teachers. Without going into the trouble of printing (by students) and carrying the prints for grading (by teachers), online submission and grading is feasible for both. Students are able to save their time and resources which are consumed on printing and binding [26]; also the teacher gets a relief from printed assignments burden. The authenticated login system and assignment module security restrict the assignment mirroring which helps in fare evaluation [13].

This module provides the assignment submission and grading facility. Assignments developed by a course teacher are uploaded on the portal and students are required to submit the assignments within deadline time through their login. The module image is shown in Fig.3. This

activity helps the students to be engaged in the learning process and work as an active participant.
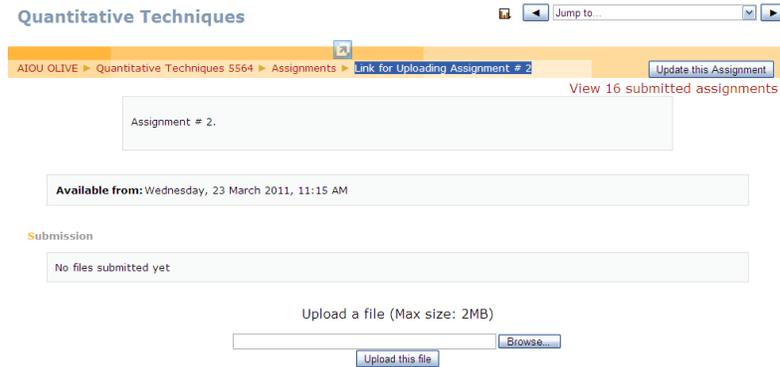

Figure 3. Assignment Uploading

Along with the assignment submission facility; online grade checking and the teachers' feedback on the assignments saves the students' time and helps them to show better performance for next assignments. The above features provide a background to propose the following hypothesis:

Hypothesis2: The assignment module features influence the student motivation to use eLearning portal.

2.3. Course Content Module

The relevancy and innovativeness of the content is essential for productive learning. The Course Content module holds the quality course content compilation feature which is useful for current and future students [26]. Updated and useful course outlines are a source of attraction for students and involve them in regular learning process on online learning portal [25]. Teacher's positive attitude plays an active role in order to create the quality content [30].

Figure 4. Course Content

Published books, research papers, relevant web links and lecture slides related to a particular topic are available on weekly basis for the students. The uploaded course content image is shown in figure 4. The quality content fulfills the students' learning needs and motivates them to interact with online portal for better learning [21, 31] and better performance in the assessment [32]. The following hypothesis is proposed in the light of the above discussion:

Hypothesis3: The course content module works as a positive predictor of student motivation to use eLearning portal.

2.4. Course Delivery Module

The course delivery medium is one of the major attractions for distant users; both the student and teacher can enjoy this facility. Course Delivery module holds the virtual importance which doesn't restrict the students to study in a physical boundary. Its features involve ease of access and learning autonomy at flexible time and place. Autonomy of learning and teaching helps in delivering the maximum from both ends. Students are free to attend their classes from any part of the world using a simple internet connection [29]. However, the security feature allows only the registered students to take classes and see the course content. This ensures a secure and unique content delivery to the students. Along with the ease of access, the flexible and user friendly interface of the module is a positive feature to motivate the students to use eLearning portal. This discussion leads to the following hypothesis:

Hypothesis4: The Course delivery module influences the student motivation to use eLearning portal.

2.5. MOODLE Features as Motivating Predictors

Motivation is the degree of persistent effort one has done to achieve his/her goal [33], however the learning motivation is achieved by applying a persistent effort towards learning[34-36].

Learning and Motivation are two multifaceted human behaviors. Students learn from their experiences, whereas there are some motivational factors that lead to the student's willingness to learn. Prominent research has been done to find a relationship between learning and motivational factors in higher education [37-39]. The continuous learning intentions and academic success of a student are linked with the level of motivation [39-41]. The previous researches explain different types of interaction among students and teacher as the predictor for student motivation in eLearning environment. Student's active participation in different types of communication activities like active role in discussion forums and continuous liaison with teacher shows the student motivation to use the system [42, 43]. In prior research, student report that the regular interaction with the system is due to the introduction of several motivating activities like quizzes, chat sessions, discussion forums in the course. The activities introduced in the course leads towards the student motivation to keep in touch with the system for more learning [44]. Information sharing motivates the student to continuously use the modules for more information gathering [45]. The opportunity of gaining more quality knowledge from a learning portal leads to its continuous usage [44].

3. Research Methodology

3.1. Population

The sample was representative of student population from a developing country i.e. Pakistan[1]. Allama Iqbal Open University and Virtual University are two institutions which are providing distance education at wide level. Virtual University fully utilizes the television media to deliver their lectures to distant students. However, Allama Iqbal Open University being a founder of distance education in Pakistan uses radio, television and online media to deliver lectures. There are 36 regional campuses and centers all over the country that facilitates the

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[1] The key author belongs to Pakistan and conducted this study in 2011, later in paper finalizing stage she moved to University of Malaya for higher studies.

students. Location of these regional campuses and centers in different provinces is presented on Pakistan map in figure 5.

Figure 5. Allama Iqbal Open University regional campuses and centers

Context was needed that is using online mode of education for their interactive classes. Undergraduate and postgraduate (Master) online students of Allama Iqbal Open University met this requirement, as they were using MOODLE LMS as a learning technology for Business, Management and Computer classes through an online mode at Allama Iqbal Open University. Four departments (Management science, English, Computer, and French) are using MOODLE to deliver online lectures; and the program is named as OLIVE (Open Learning Institute of Virtual

Education). Students who were enrolled in autumn, 2010, spring 2011, autumn 2011 semesters completed the questionnaires and their enrollment region wise is presented in Figure 6.
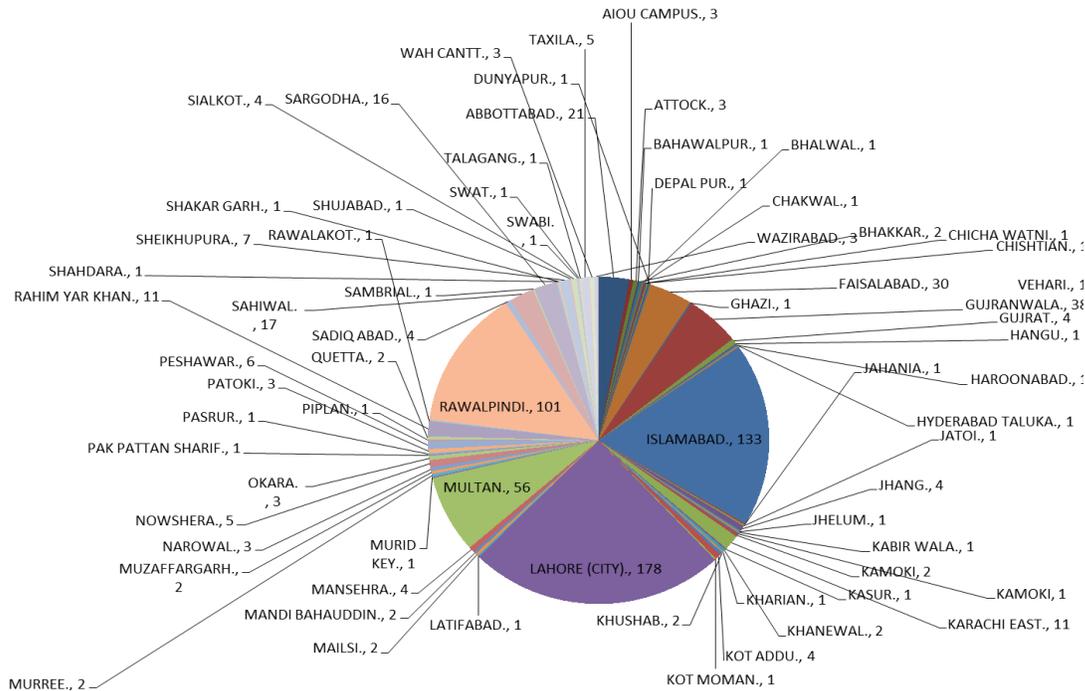

Figure 6. Region wise students' presentation

Instrument

Web-based closed ended questionnaire was used to target the online students, who are living at far areas. A survey website was designed specifically for this study with user-friendly interface to increase the response rate. An electronic mail, explaining the research objectives, confidentiality of the response and web-based survey link was sent to mailing list of 800 online students. To increase the survey credibility, official electronic mail address of the OLIVE administrator was used. The completed acknowledged questionnaires were 350; however, 276 questionnaires were filled correctly and useable for the study, explaining 34.5% of the response rate. Manual data entry was performed in SPSS 20 and checked twice for entry errors and consistency. Table 1. Summarizes the sample characteristics of the respondents.

Table 1. Sample characteristics and Control variables

Demographics	Frequency	Percentage	One-Way ANOVA
Gender			**.966**
Male	193	70	
Female	83	30	
Age (Years)			**.80**
20-30	142	51	
31-40	98	36	
41-50	36	13	
Initial Computer Skills			**.000**
Beginner	90	33	
Intermediate	125	45	
Expert	61	22	
eLearning Experience			**.000**

0	13	5	
1	127	46	
2	105	38	
3	31	11	

3.2. Control Variables

The effect of demographic variable is usually found on dependent variable that may affect the relationship between independent and dependent variable [46]. One-way analysis of variance is applied on all demographic variables with the dependent variable. Analysis revealed differences in mean values of dependent variable due to Initial Computer Skills and eLearning experience. The result of one-way ANOVA is reported in Table 1. in the last column.

3.3.Measures

Items were extracted from prior validated research instrument which confirm their content validity. Web-based Learning Environment Instrument [37] has been adapted to administer the Communication Module, Assignment Module, Course Content Module and Course Delivery Module items. However for measuring the Motivation items, Academic Motivation scale has been adapted [47]. The reliability of all constructs assessed through Cronbach's alpha had values greater than 0.70, which assures the acceptable reliability [48]. The reliability of each variable is reported in Table 2. Lack of attention towards measuring the MOODLE modules features has been noticed and there was not a single instrument to measure the modules features from student perspective. Hence this new modified survey 'MOODLE Module Survey (MMS)' is a positive addition in literature.

4.   Results and Discussion

4.1. Reliability correlation statistics

At the first stage the author has assessed the association between variables through Pearson correlation coefficient. The correlation values are reported in Table 2. The significant ten pairs of correlation among four independent variables are identified. There is also a significant positive association between four independent variable and student motivation to use eLearning system.

Table 2. Reliability and Correlation

Correlation among study variables						
Study variables	Alpha (α)	MOT	CMM	AMM	CCM	CDM
MOT	.74	1				
CMF	.80	.54***	1			
AMF	.72	.63**	.73**	1		
CCMF	.71	.68***	.54***	.61***	1	
CDMF	.73	.60***	.71***	.64***	.62***	1
** Correlation is significant at the 0.01 level (2-tailed).						

At the second stage, considering the multicollinearity issues, by noticing the significant association between independent variables, additional tests have been applied. Regression model is applied for four independent variables (MOODLE module) and one dependent variable (motivation). The results in Table 3 under variance inflation factor (VIF) and the associated tolerance for four independent variables are examined. The benchmark value for the VIF is less than 10 and tolerance value greater than 0.1 is acceptable and greater than

0.33 is considered good [55]. The results show that, the VIF values range from 1.27 to 1.58 and tolerance values range from 0.63 to 0.79 for the four independent variables which is very well within the acceptable benchmarks.

4.2. Regression Analysis

The hypothesized model is tested through multiple linear regression analysis with reference to the main effects. Control variables are entered first followed by all independent variable in the second step. The results shown in Table 3 prove the significant relationship between independent and dependent variables.

"**Table 3. Regression Analysis**"

Predictors	β	Significance	ΔR^2	Tolerance	VIF
CMF	.41 ***	.00	.05	.76	1.31
AMF	.31**	.02	.04	.68	1.46
CCMF	.32***	.00	.04	.63	1.58
CDMF	.35***	.00	.05	.79	1.27
Dependent Variable: MOT					

Communication Module is significantly associated with the student motivation to use eLearning (β= .41, p<.001) and prove the high significance level. The combine effect shows the positive relationship between Assignment Module and student motivation to use eLearning (β= .31, p<.01) and significant level is also good. The favorable association is found between Course Content Module and student motivation to use eLearning (β= .32, p<.001) with high significance level. The positive relationship between Course Delivery Module and student eLearning motivation (β= .35, p<.001) is encountered. All the results are in favor of the hypothesized model. The test results are summarized in Table 6.

"**Table 6. Test results of hypotheses**"

Hypothesis	Effects	Results
Hypothesis 1	Effect of CM on MOT to use eLearning	Supported
Hypothesis 2	Effect of AM on MOT to use eLearning	Supported
Hypothesis 3	Effect of CCM on MOT to use eLearning	Supported
Hypothesis 4	Effect of CDM on MOT to use eLearning	Supported

The path diagram with the regression and correlation results is displayed in Figure 6.
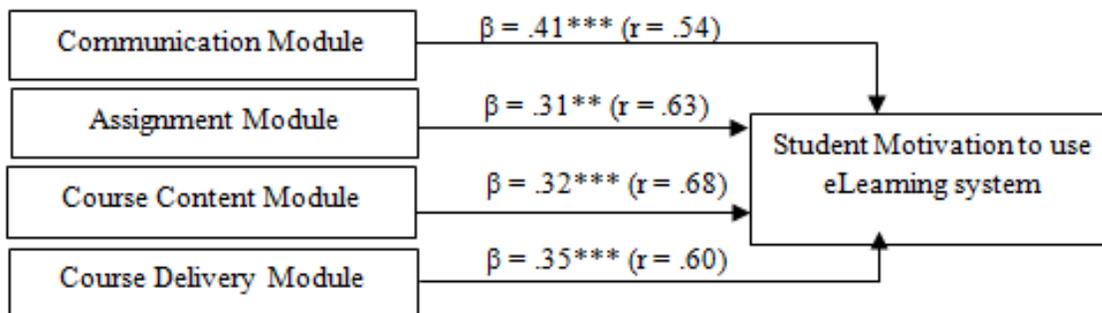

Fig. 6. Research Model with results

4.3. Discussion

Communication Module is accounted for 4.7% variance ($\Delta R^2 = .047$) in student motivation to use eLearning. The result of regression for Communication Module is strongly supporting the first hypothesis, which shows that the facility of regular online chat sessions, positive liaison between student and teacher, group discussions and the tools available in the MOODLE for communication are very helpful in student learning. Students have ample opportunities to communicate with other students and teacher. All these features positively influence on student motivation to use the eLearning portal and supporting the first hypothesis.

Assignment Module is accounted for 4% ($\Delta R^2 = .04$) variance was found in student motivation to use eLearning. The results support the fact that students find it convenient to use the online assignment submission module. It saves their time and recourses like printing and travelling cost. The students feel that their assignments are uploaded in a secure portal, where the teacher gives a fruitful response and feedback on their assignments. Students are highly satisfied with the online grade checking facility, which play a vital role in increasing their motivation to use the eLearning portal.

Course Content Module explained 4% ($\Delta R^2 = .04$) variance in student eLearning motivation. The results support the hypothesis, and shows that the students are really satisfied with the course contents uploaded on the portal. The online knowledge resources made available for the students have received their appreciation. The structure and content of the course are according to the need of the students which lead to the student motivation to use eLearning portal for their future lessons.

Course Delivery Module has incremental 5% ($\Delta R^2 = .05$) variance in student eLearning motivation. The results are in favor of the hypothesis, explaining the positive responses of the students regarding delivery module. The student feels autonomy in using the online learning portal. The anywhere, anytime learning opportunity makes the system more acceptable for the students. This facility helps in enhancing the student motivation to use the system.

5. Conclusion

Student motivation predictors in eLearning environment are examined in this study. MOODLE modules are studied in order to understand the level of student motivation for eLearning environment. The MOODLE modules features, named Communication Module Features, Assignment Module Features, Course Content Module Features and Course Delivery Module Features proved as a positive predictor of the student motivation to use eLearning portal. The students are satisfied with the communication tools available on the MOODLE, which helps in social and educational gain. The content uploaded on the portal with exact relevance to the course and from the recent recourses motivates the student to take advantage of the current and useful knowledge repository. When the students need not to go anywhere to submit their assignments without wasting money on printing cost, then this increase their acceptance and motivation level. The easy accessibility feature strongly motivates the student to use the eLearning system for their further education.

This research will help the institutions and administration to notice the factors that influence the student motivation in eLearning environment. The enhancement in MOODLE modules will be more beneficial for the students. For further future research, this study can be conducted on other open source LMS available in market. This will help the institutions to select the better LMS for their online learning mode.

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