

Assessing the Impact of Organizational Support and Prior Project Training: A Structural Equation Modeling Approach

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Abstract

The eLearning industry has grown rapidly in recent years, and as a result in the context of higher education there is significant interest in implementing and managing eLearning through Learning Management Systems (LMS). This study uses the Technology Acceptance Model (TAM) to test faculty members' acceptance of a new LMS using structural equation modeling (SEM). In addition, the study extends the model by incorporating two external factors: training programs on the new LMS conducted prior to implementation and organizational support for the new LMS. Each of these two factors is generally believed to have a significant impact on the acceptance of a new LMS on the part of faculty members. The results of this study validate the use of TAM in the context of higher education. Further, our findings affirm the importance of providing training in regard to the LMS before implementation and likewise the importance of providing organizational support.

Keywords: organizational support, training, technology acceptance model, structural equation modeling

1. Introduction

The eLearning industry has grown rapidly in recent years, and as a result in the context of higher education there is great interest in implementing and managing eLearning through Learning Management Systems (LMS). However, the success of any new eLearning system at a university depends in large measure on the extent to which faculty members accept and use it. In this regard, researchers have identified many factors that could foster faculty members' acceptance of a new eLearning technology and that, therefore, facilitate the successful integration of that technology into their teaching. One of the most widely used tools in the literature is the Technology Acceptance Model (TAM), which describes how users come to accept and use a new technology.

In fact, TAM is used extensively to test user acceptance of new technology. This model was proposed by Davis (1986) and then later used by Davis, Bagozzi, and Warshaw (1989) in an educational environment. The two main constructs underlying this model are perceived usefulness (PU) and perceived ease of use (PEU), both of which affect the user's attitude toward the new technology and his/her behavioral intention toward using it.

In Davis's (1989) definition, PU refers to "the prospective user's subjective probability that using a specific application system will increase his or her job performance within an organizational context," whereas PEU refers to "the degree to which the prospective user expects the target system to be free of effort" (p. 985). According to TAM, PEU influences PU, suggesting that the easier a technology is to use, the greater the PU, and also that the greater the expected benefits of the new technology the greater the behavioral intention toward using the technology.

TAM has been tested with various technology applications (e.g., word processing, email, personal computers, operating systems, software packages, and the internet) and with multiple user groups (e.g., students, professional, workers, customers, internet users). Researchers have extended the original version of this model to include additional external factors believed to affect acceptance of technology. The literature encompasses a number of TAM meta-analysis studies, including King and He (2006), Ma and Liu (2004), Legris et al. (2003), Schepers and Wetzels (2007), Yousafzai et al. (2007), and Turner et al. (2010), all of which show TAM as a theoretical model that can be used in a range of technology applications.

In the context of higher education, many researchers have validated the use of TAM (Lee et al., 2005; Park, 2009;

Saadé & Bahli, 2005; Teo, 2010, 2012) and even extended it by adding constructs and/or by incorporating it with other perspectives. For example, Lee et al. (2005) integrated TAM with a motivational perspective to capture both the extrinsic and intrinsic motivators driving students' behavioral intention of using a new LMS. The results show that PU and perceived enjoyment had a significant impact on students' behavioral intention of using a new learning medium, whereas PEU had no significant impact in this regard. Arguing that subjective norms related to technology and facilitating conditions can be used to research attitudes toward using a computer (computer attitude), Teo et al. (2008) added these as external variables to extend TAM. Their results show that facilitating conditions had a significant impact on computer attitude through PEU whereas PU, PEU, and subjective norms each had a significant impact on the computer attitude of teachers.

The present study extends TAM in order to examine the effects of two external variables generally believed to impact the extent to which faculty members accept a new LMS: prior project training (PTRN) and organizational support. The study sample comprises faculty at King Abdulaziz University (KAU) in Saudi Arabia. Previous studies show the importance of LMS training offered by institutions (Bradley & Lee, 2007; Dorobăt & Năstase, 2010; Garrote & Pettersson, 2007; Lonn & Teasley, 2009) and the significant effects of such training on both PU and PEU (Agarwal & Prasad, 1999; Igarria et al., 1995). However, none of these studies specifies the timing of the training, whereas in the present study, we consider only LMS training conducted immediately prior to implementation. Further, we expect the results of this study to provide a basis for identifying the challenges that need to be addressed in higher education when a new LMS is implemented and for determining the factors likely to foster the acceptance and use of an LMS on the part of faculty members.

The remainder of this paper is organized as follows. In Section 2, we review the related literature and present the main hypotheses explored in this study. Section 3 outlines the research methodology. Section 4 presents the data analysis and results. Section 5 concludes the analysis and offers a discussion of the implications of this research.

2. Literature Review and Hypothesis Development

Well-designed LMS training can show faculty members how they can use LMS tools to support interactive teaching and efficient communication, including for distance learners. Further, training of this nature can help faculty members understand how to use an LMS to its fullest potential and in specific ways in order to support their teaching practice.

According to Garrote and Pettersson (2007), educational institutions should provide training to their instructors in regard to understanding and using an LMS until it becomes a routine part of their faculty's teaching. The researchers also noted that LMS training makes it easier for instructors to work with an LMS with less effort. Similarly, Lonn and Teasley (2009) argued that LMS training is valuable for instructors, as it can offer a foundation for understanding and using online interactive activities.

Agarwal and Prasad (1999) presented empirical evidence to show that individual differences between 230 information technology innovation users affect technology acceptance mediated by the TAM constructs, i.e., PU, PEU, and user attitude. The individual differences in their research model comprised role with regard to technology, tenure in the workforce, level of education, prior/similar experiences, and participation in training. The results showed that participation in training had a significant effect on PU consistent with the work of Davis and Bostrom (1993) in which they showed that training can significantly increase usage of and satisfaction with technology as well as improve attitudes toward it. According to Agarwal and Prasad (1999), LMS training can be used as a mechanism to enhance the use of a new technology by virtue of its influence on beliefs. Igarria et al. (1995) and Amoako-Gyampah and Salam (2004) also showed that the main constructs of TAM, i.e., PU and PEU, have a statistical significant effect on training.

In the present study, our focus is LMS training conducted immediately before the launch of a new LMS. We expect to find that the extent to which the LMS is accepted depends on LMS training provided before the launch to faculty members, which is mediated by PU and PEU. We, therefore, developed the following hypothesis related to LMS training and LMS use:

Hypothesis 1 (H1). LMS training provided to faculty members shortly before the implementation of an LMS—i.e., prior project training (PTRN)—has a positive impact on their acceptance of this new technology mediated through the TAM constructs of PU and PEU.

Organizational support refers to the effectiveness of the technical resources an educational institution provides to support faculty members in using an LMS. Researchers have noted that the lack of such support may hinder the full utilization of technology (Davis, 1989; Fornell, 1982). Hypothesizing that intra- and extra-organizational variables would affect technology acceptance, Igarria et al. (1997) studied factors that influence technology

acceptance in small firms. Their results show that management support and external computing support have a significant effect on both PU and PEU. Igbaria et al. (1995) also found a significant relationship between PU and management support in the implementation of technology. According to results reported in other studies, organizational support affects user acceptance of technology, either directly or through behavioral intention (Taylor & Todd, 1995; Thompson et al., 1991). We, therefore, developed the following hypotheses related to organizational support and technology acceptance:

Hypothesis 2 (H2). Organizational support has a positive impact on new technology acceptance mediated by the PU and PEU constructs in TAM.

Hypothesis 3 (H3). Organizational support has a positive impact on new technology acceptance mediated through behavioral intention in TAM.

3. Methodology

3.1 Sample

This study was carried out at King Abdulaziz University (KAU), one of the largest public universities in Saudi Arabia. (Note 1) The university has 24 colleges and close to 200,000 enrolled students, both male and female, of whom more than 6,000 students are enrolled in various distance education programs. The university established its Deanship of Distance Learning (DDL) in 2004 with the mission of “extensively contribut[ing] to the ongoing process of developing education through effective use of modern technology.” (Note 2). In Fall 2014, the DDL replaced the two systems, CENTRA and EMES, that it had been using to deliver online classes with the well-known LMS Blackboard (Bb).

A year before launching Bb, the DDL offered training courses to all its faculty members: the training was compulsory for all faculty members teaching online courses and optional otherwise. (Note 3) Conducted by a certified trainer, the training program covered the basic benefits and functions of Bb. It was held in the DDL labs at the university and comprised a total of 10 hours over two days (5 hours per day). At the end of the training, each participant was awarded a certificate of completion and cleared to teach online classes. The DDL also offers more advanced training courses on Bb during the academic year. For this study, the main data-collection instrument was a questionnaire, which was distributed in Fall 2015, the semester in which Bb was implemented.

3.2 Variables Measures

The measures used in this study were drawn from well-established instruments. In fact, we used numerous items exactly as written and validated in past research. However, we did make some changes in regard to wording in order to ensure a good fit with the Bb context. We validated these changes by conducting a pilot study, whereby we verified the clarity of the questionnaire’s wording and the constructs’ reliability and validity within our study context. Upon completing the pilot study, we prepared the final questionnaire.

It should be noted here that the pilot and the final questionnaire were written in English. However, they were translated into Arabic, as most of the surveyed faculty were native speakers of this language. To construct the Arabic version of the questionnaires, we used the back translation method (Brislin, 1986). Two experts in this method who were bilingual in the relevant languages translated the questionnaires into Arabic and then translated them back into English until the two versions of each converged.

The participants were asked to rate the following measures using a five-point Likert scale where 1 = strongly disagree and 5 = strongly agree.

Perceived ease of use (PEU). We assessed PEU using a 9-item instrument developed by Davis (1989), Davis et al. (1989, 1992), and Taylor and Todd (1995) that asked respondents to indicate the extent to which they agreed with the following statements: Bb is clear and easy to use; Learning to operate Bb is easy; Bb can do what I want it to do; Bb is understandable; It is easy to remember how to perform tasks with Bb; Bb is flexible to use and interact with; navigation through Bb windows is easy; Bb is flexible to use; and Using Bb is easier than using the old LMS.

Perceived usefulness (PU). We assessed PU using a 7-item instrument developed by Davis (1989) and Davis et al. (1989, 1992) that asked respondents to indicate the extent to which they agreed with the following statements: Bb is useful in my work and increases my productivity; Bb enhances my effectiveness in teaching; Bb improves my job performance and accuracy; Bb increases my job quality; Bb saves me time; Bb helps me be more organized (Lynn et al., 2002; Teo et al., 1999; Venkatesh & Davis, 2000).

Attitude (ATT). We assessed ATT using a 6-item instrument developed by Davis (1986), Taylor and Todd (1995), Fishbein and Ajzen (1975), and Menon and Kahn (2002) that asked respondents to indicate the extent to which

they agreed with the following statements: Bb will make my teaching easier; Bb is better than the old LMS; Bb is reliable; I have a generally favorable attitude toward using Bb; Using Bb allows me to use interactive tools more quickly; I think that using Bb is a good and positive idea.

Behavioral intention (BI): We assessed BI using a 6-item instrument developed by Davis (1986) and Taylor and Todd (1995) that asked respondents to indicate the extent to which they agreed with the following statements: I will use Bb in my classes; I intend to extend using Bb to my regular classes.

Prior project training (PTRN): We assessed PTRN using a 7-item instrument developed by Venkatesh and Davis (1996) that asked respondents to indicate the extent to which they agreed with the following statements: The kind of training provided prior to launching the new LMS was complete; The trainers were knowledgeable and aided me in understanding Bb; My level of understanding in terms of using Bb improved substantially during the training program; The training gave me confidence to use Bb; The training was of adequate length and detail; The training program was appropriate prior to the implementation of Bb; and The program training provided me with a complete understanding of the features, functions, and abilities of Bb.

Organizational Support (OS): We assessed OS using a 2-item instrument that asked respondents to indicate the extent to which they agreed with the following statements: The technical assistance provided by KAU was sufficient; and Bb is compatible with other e-services at KAU.

3.3 Data Collection

The questionnaire designed for this study was distributed *over a one-month period* by visiting faculty members at their offices and asking them to *fill out the questionnaire. Faculty members had the option of filling out the online version of the questioner or the printed one.* In total, 233 responses were obtained, representing a response rate of 92%. Of these 233 respondents, 210 were faculty members who had completed the training on the LMS.

The respondents represent a diverse sample in terms of educational level, academic rank, and age. Specifically, an undergraduate degree was the highest educational level achieved by 14%, whereas the highest level for 42% was a master's degree, and for 44% a doctoral degree. About 8% of the respondents had attained the rank of full professor, 9% were associate professors, 32% were assistant professors, and 51% were instructors. In terms of college representation, the highest number of respondents (31%) held positions with the Faculty of Economics and Administration followed by the Faculty of Arts and Humanities (27%), and the Faculty of Science (15%). The remaining 27% represented 10 other colleges.

The respondents ranged in age as follows: 24% were aged between 25 and 30, 43% were between 31 and 40, and about 20% were between 41 and 50. The remaining 13% were 51 years of age or older. There was considerable variation in terms of the number of years the respondents had worked at the university, with an average of 8.5 years.

4. Data analysis and Results

4.1 Reliability and Validity Analysis

The reliability of the measurement instrument was determined using Cronbach's alpha coefficient (Cronbach, 1951). Table 1 shows that the Cronbach's alpha coefficient for all the constructs ranged between 0.72 and 0.94, which is considered as indicating a very high level of reliability.

Table 1. Reliability test

| Constructs | Cronbach's alpha (α) |
|-----------------------------|-------------------------------|
| Perceived Ease of Use (PEU) | 0.943 |
| Perceived Usefulness (PU) | 0.934 |
| Attitude (ATT) | 0.923 |
| Behavioral Intention (BI) | 0.717 |
| Prior Training (PTRN) | 0.927 |
| Organizational Support (OS) | 0.715 |

4.2 Measurement Models and Results

We followed a two-step approach to estimate the measurement model before constructing the structural model (Anderson & Gerbing, 1988), and we assessed the convergent and discriminant validity of the scales used in the

proposed model (Fornell & Larcker, 1981). Convergent validity can be assessed by testing the extent of any correlation among the items measuring the constructs. In this study, the loading for each item exceeded 0.50, which explained 73% of the variance and thereby provided strong evidence for convergent validity. Discriminant validity was confirmed by determining whether the Average Variance Extracted (AVE) of the underlying constructs was higher than the squared correlation between the constructs. The result suggests that the measurement has adequate discriminant validity.

Table 2. Discriminant validity test

| Construct | Critical Ratio (C.R.) | Average Variance Extracted (AVE) |
|-----------------------------|-----------------------|----------------------------------|
| Perceived Ease of Use (PEU) | 0.943 | 0.648 |
| Perceived Usefulness (PU) | 0.933 | 0.665 |
| Attitude (ATT) | 0.922 | 0.664 |
| Behavioral Intention (BI) | 0.741 | 0.595 |
| Prior Training (PTRN) | 0.929 | 0.652 |
| Organizational Support (OS) | 0.717 | 0.559 |

Table 3 shows the results of our analysis of the individual measurement model for each of the constructs in the study. (Note 4) The values of the absolute and comparative fit measures were above their corresponding acceptable criteria. The results of the absolute fit measures suggest that the measurement models are capable of predicting the observed covariance, whereas the results for the comparative fit measures suggest that the measurement models achieve a satisfactory fit.

Table 3. Goodness of fit measure of the main constructs of the proposed model

| Goodness of fit measure | Criteria | PEU | PU | PTRN | ATT |
|--|-------------|--------|--------|--------|--------|
| Distinct parameters | | 19 | 15 | 14 | 13 |
| Chi-square (χ^2) of estimated model | | 82.845 | 37.866 | 60.930 | 22.991 |
| Degree of freedom (<i>df</i>) | | 26 | 13 | 14 | 8 |
| Chi-square/degree of freedom (χ^2/df) | ≤ 5.0 | 3.186 | 2.913 | 4.352 | 2.874 |
| Goodness of Fit Index (GFI) | ≥ 0.90 | 0.922 | 0.956 | 0.953 | 0.970 |
| Root Mean Square Residual (RMSR) | ≤ 0.10 | 0.097 | 0.091 | 0.120 | 0.090 |
| Normed Fit Index (NFI) | ≥ 0.90 | 0.951 | 0.970 | 0.949 | 0.977 |
| Non-Normed Fit Index (NNFI) | ≥ 0.90 | 0.953 | 0.968 | 0.940 | 0.972 |
| Comparative Fit Index (CFI) | ≥ 0.90 | 0.966 | 0.980 | 0.960 | 0.985 |
| Adjusted Goodness of Fit Index (AGFI) | ≥ 0.80 | 0.865 | 0.956 | 0.870 | 0.922 |

4.3 Analysis Using Structural Equation Modeling (SEM)

We applied SEM to examine our proposed model (Model A) using AMOS. Table 4 shows the results related to the goodness of fit for the research model: $\chi^2 = 16.360$; $df = 5$; $\frac{\chi^2}{df} = 2.727$ within the acceptable range; GFI = 0.978; RMSR = 0.086; NFI = 0.980; NNFI = 0.967; and CFI = 0.987. The overall fit of the proposed model represents an acceptable overall goodness of fit for the research model.

Table 4. Goodness of fit measure of the proposed model

| Goodness of fit measure | Recommended value | Values |
|--|-------------------|--------|
| Distinct parameters | | 21 |
| Chi-square (χ^2) of estimated model | | 16.360 |
| Degree of freedom (<i>df</i>) | | 6 |
| Chi-square/degree of freedom (χ^2/df) | ≤ 5.0 | 2.727 |
| Goodness of Fit Index (GFI) | ≥ 0.90 | 0.978 |
| Root Mean Square Residual (RMSR) | ≤ 0.10 | 0.086 |

| | | |
|---------------------------------------|-------|-------|
| Normed Fit Index (NFI) | ≥0.90 | 0.980 |
| Non-Normed Fit Index (NNFI) | ≥0.90 | 0.967 |
| Comparative Fit Index (CFI) | ≥0.90 | 0.987 |
| Adjusted Goodness of Fit Index (AGFI) | ≥0.80 | 0.924 |

Figure 1 shows the standardized path coefficient. All the hypothetical relationships are supported. The estimate of the standardized path coefficient (β) indicates that the linkage between PTRN and PEU is positive and significant ($\beta = 0.314$, $t = 5.196$) and the linkage between PTRN and PU, which supports H1 ($\beta = 0.12$, $t = 2.158$, $p = 0.031$), is highly significant. OS has a significant and direct impact on PEU, thereby providing support to H2. The strongest magnitude of the standardized path coefficient was found in the relationship between PEU and PU on ($\beta = 0.639$), followed by PU and ATT ($\beta = 0.502$). Both PU and PEU had a significant effect on user attitude. In addition, both PU and ATT had an almost equal significant impact on the BI toward using the new LMS.

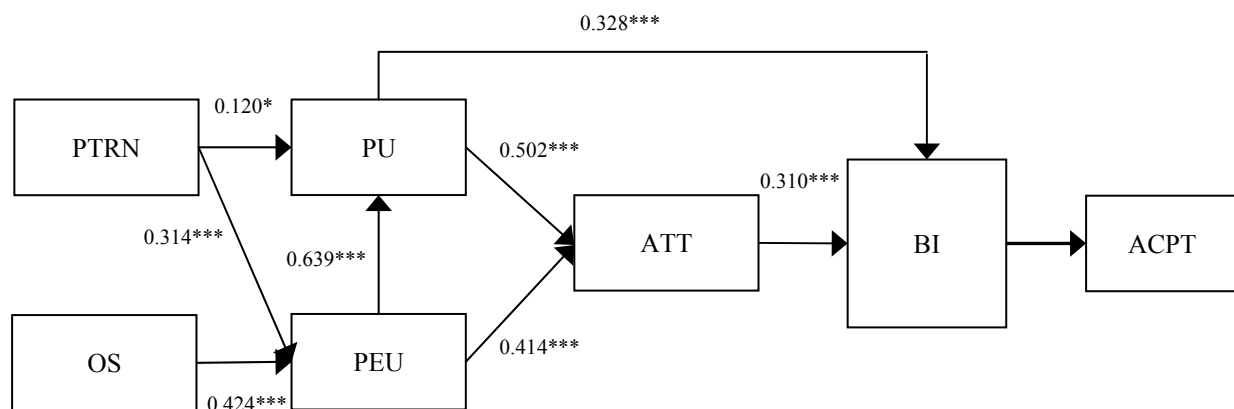


Figure 1: Research Model

4.4 Comparison of Alternative Models

SEM, which enables a theoretical model to be tested as a whole, is best conducted in the form of comparisons among competing or alternative theoretical specifications that are nested in one another and can be justified theoretically (MacCallum, 1995; Baumgarner & Homburg, 1996) such that the most nested model with the best goodness of fit should be selected as the true model.

In this regard, we built two models to shed light on the key features of the proposed model. The first model, A1, was developed on the assumption that OS can also have an impact on ATT toward the LMS. This hypothesis helps to determine whether OS has a direct effect on user attitude toward the LMS, or such an effect is mediated through PEU. In a similar way, we developed the second model, A2, in which we tested whether OS directly affects the BI toward using the LMS rather than being mediated through PEU and ATT.

Tables 5 and 6 present the standardized path estimates and the goodness of fit for the two models, respectively. Both models are a good fit, as each meets the criteria for fit measures. Through a comparison of these models with the proposed model, it can be seen that the proposed model has higher χ^2 than does Model A1 and is a better overall model fit. In addition, the new estimated standardized path coefficients were insignificant. Thus, the proposed model is preferable, such that Model A1 was rejected. In addition, we found evidence that OS has no effect on technology acceptance mediated through ATT. Instead, technology acceptance is mediated only through PEU. On the other hand, we used Model A2 to test H3, i.e., that OS affects technology acceptance through BI. For H3, Model A2 appears to have a better fit model than the proposed model does, where the value of the $\chi^2 = 9.566$ ($P = 0.000$) for Model A2. In Model A2, the estimated standardized path coefficients for OS on BI is 0.161 ($t = 2.707$, $p = 0.000$), which supports H3. All the other original paths remain significant.

In summary, the results of the alternative models suggest that Model A2 is the best fit structural model among the proposed model and the alternative models, such that all three hypotheses explored in this study are supported. We, therefore, chose Model A2 instead of Model A as the true model.

Table 5. Path estimates for models A1 and A2

| | Model A1 | | | Model A2 | | |
|--------------------------|----------|---------|---------|----------|---------|---------|
| | B | t-value | p-value | β | t-value | p-value |
| Hypothesized path | | | | | | |
| PEU→PU | 0.639 | 11.515 | 0.000 | 0.639 | 11.515 | 0.000 |
| PU→ATT | 0.498 | 10.110 | 0.000 | 0.502 | 10.197 | 0.000 |
| PEU→ATT | 0.400 | 7.271 | 0.000 | 0.414 | 8.419 | 0.000 |
| ATT→BI | 0.310 | 3.605 | 0.000 | 0.258 | 2.955 | 0.003 |
| PU→BI | 0.328 | 3.815 | 0.000 | 0.292 | 3.390 | 0.000 |
| PTRN→PU | 0.120 | 2.158 | 0.031 | 0.120 | 2.158 | 0.031 |
| PTRN→PEU | 0.314 | 5.196 | 0.000 | 0.314 | 5.196 | 0.000 |
| OS→PEU | 0.424 | 7.013 | 0.000 | 0.424 | 7.013 | 0.000 |
| OS→ATT | 0.029 | 0.651 | 0.515 | -- | -- | -- |
| OS→BI | -- | -- | -- | 0.161 | 2.707 | 0.007 |

Table 6. Goodness of fit for Models A1 and A2

| | Recommend ed value | Values | |
|-------------|-----------------------|----------|----------|
| | | Model A1 | Model A2 |
| χ^2 | | 15.942 | 9.566 |
| Df | | 5 | 5 |
| χ^2/df | ≤ 5.0 | 3.188 | 1.913 |
| GFI | ≥ 0.90 | 0.979 | 0.994 |
| RMSR | ≤ 0.10 | 0.097 | 0.063 |
| NFI | ≥ 0.90 | 0.980 | 0.988 |
| NNFI | ≥ 0.90 | 0.958 | 0.983 |
| CFI | ≥ 0.90 | 0.986 | 0.994 |
| AGFI | ≥ 0.80 | 0.910 | 0.944 |

5. Conclusion

In this study, we used TAM to test faculty members' acceptance of a new LMS implemented in the context of higher education, i.e., at KAU in Saudi Arabia. Further, the study extends the model through the addition of two external factors: training programs conducted immediately prior to the implementation of the new LMS (prior project training) and organizational support for the new LMS. These two factors are believed to have a significant effect on faculty members' acceptance of a new LMS.

We proposed three main hypotheses in regard to these two external factors. In particular, we hypothesized that training programs immediately prior to the implementation of the LMS would affect technology acceptance as mediated through PEU and PU, whereas organizational support would affect technology acceptance through PEU and/or BI.

Our results validate the use of TAM in the context of higher education consistent with the results reported by Park (2009), Teo (2010), and Teo (2012). In addition, our findings shed light on the importance of prior project training (PRTN) on the implementation of a new LMS in the focal context. In particular, we show that PRTN has a significant effect on PEU and PU, which, in turn, influence the BI of faculty toward accepting and using the Bb.

A major conclusion of this study pertains to organizational support. Our results provide support for our two hypotheses whereby organizational support affects faculty members' acceptance of the new LMS through PEU and BI.

6. Limitations and Future Research

The most obvious limitation to this study is that LMS training is compulsory for faculty members teaching online classes. Given the fact that online teaching is only offered through two colleges at the university, it is hardly surprising that faculty members in the other colleges are not aware of the existence of the LMS. In this

particular context, therefore, it would be advisable for the university to work on raising awareness of the LMS throughout its colleges. In addition, the DDL should also promote its advanced training program on using Bb.

To better understand the changes that may occur in respect to implementing an LMS, it would be beneficial to perform a longitudinal analysis in future research. In order to facilitate such an analysis, all the respondents in the present study were asked to provide their names and contact information and to indicate whether they would be willing to participate in a future questionnaire. When all the questionnaires had been collected, each respondent was given an ID number to shield their identities during the analysis while their contact information matched to the ID number was kept in a separate database.

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Notes

Note 1. In terms of academic achievements, the university is considered one of the top five schools in the Middle East and has several international program accreditations.

Note 2. The first group of distance education learners graduated during the academic year 2011–2012.

Note 3. The university does not require faculty members to use Bb for traditional face-to-face courses.

Note 4. The individual measurement models cannot be applied to any construct that has only two measures. Therefore, we could not carry out this analysis for either BI or OS.

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