



# Extending the Technology Acceptance Model to Improve Usage & Decrease Resistance toward a New Technology by Faculty in Higher Education

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## ABSTRACT

The study analyzed why some university faculty resisted a new software program using a new model of motivation. The new model, called the Motivation Acceptance Model (MAM), was inspired by the technology acceptance model and the Commitment and Necessary Effort (CANE) model of motivation. This model was tested on faculty at a university who were resisting a new software program called Live-Text. Regression analysis was utilized to determine the relationship between variables of the MAM. The study demonstrates that the MAM accurately measured the relationship between professors' perceptions and their use of Live-Text. The research also suggests that perceived utility of Live-Text and users' attitudes toward Live-Text were statistically significant predictors of Live-Text use and that perceived ease of use also predicted whether the professors found Live-Text useful.

*Keywords: Technology Acceptance Model, Motivation Acceptance Model, Resistance to Change, Live-Text*

## INTRODUCTION AND BACKGROUND

Employee resistance and low motivation to use new technology is a problem that continues to trouble business and educational organizations throughout the world (Ngafeeson, 2015). A Technology Acceptance Model (TAM) was designed to include additional behavior constructs to develop further understanding of technology acceptance. Users continue to struggle with new technology because technologies are constantly changing and there is increased pressure on employees to develop their skills so that their organizations can stay competitive. Meier, Ben and Schuppan (2013) examined employees' resistance to change and their attitude toward the adoption of electronic records system in an organization. They found that fear of losing work autonomy, social influence, and perceived quality of information significantly influenced employees' resistance to change. These authors explained that the "Technology Acceptance

Model should be enhanced by introducing additional variables on the context of information communication technologies related to transformation" (p. 327). Research conducted by Sevier (2003) at Macalester College highlighted the need to overcome organizational resistance in academia as well. He stated "motivational measurements and strategies were used to create a sense of urgency that would overcome internal resistance in the organization" (p. 23). Lwoga and Komba (2015) investigated the factors that influenced students' intention to continue using web-based learning management system (LMS). They suggested in their article that resistance to change can be reduced if both faculty's and student's feedback are considered during the design, development, and implementation phase of a new technology or LMS.

The current literature on resistance to technology and solutions such as the TAM often ignore motivational elements that are fundamental to an employee's decision about whether or not to embrace a new technology. Motivational issues have led to numerous challenges for business and academic environments. Low motivation and resistance to technology is a growing problem in academic and business settings throughout the world. Live-Text is a web-based application that assists faculty and students to collaborate and share classroom learning materials and assignments as well as track student progress in an online course. Perspectives on Live-Text should be measured using a model that combines motivation with the acceptance of technology on an organizational level. Because there are few successful models that specifically address issues of technology acceptance and motivation on an organizational level, a solution would be to form a new hybrid model inspired by the TAM and the CANE model. The formation of a hybrid model is well supported by the literature because the TAM was built upon the premise that new constructs could be added. Motivation is a construct that must be addressed when considering whether a person will perform an action or undertake a new task. The Motivation Acceptance Model

was developed in this study to blend previously tested theories on technology acceptance with fundamental motivational concepts to expand the literature on ways to successfully implement new technology in organizations. MAM was applied to the faculty at a large university with a new technology called Live-Text. Faculty was introduced, and faculty members could embrace or resist technology directly or passively (Petrini & Hultman, 1995). Even though many faculty members embraced Live-Text, many others either actively or passively resisted its implementation. The level of acceptance and the causes of resistance were determined to locate solutions to overcome resistance and encourage the successful implementation of Live-Text. This study aims to improve the understanding of why faculty resist new technology in a university setting and how motivation to use and acceptance of technology can be enhanced to help faculty succeed in adoption of Live-Text.

The research question for this study is, “What are the relationships between the components of the MAM as applied to its usefulness in getting faculty to use Live-Text? From this research question, the following hypotheses were derived (see Figure 1):

H1: An increase in positive attitude, perceived usefulness, perceived ease of use, and perception of organizational support toward Live-Text will result in a statistically significant increase in the use of Live-Text.

H2: An increase in perceived ease of use and perception of organizational support toward using Live-Text will result in a statistically significant increase in a positive attitude toward Live-Text.

H3: An increase in perceived ease of use and perceived organizational support of Live-Text will result in a statistically significant increase in perceived usefulness of Live-Text.

## REVIEW OF LITERATURE

### Technology Acceptance Model (TAM)

The TAM originated from Fishbein and Ajzen’s (1975) theory of reasoned action. This theory suggests that a person’s behavior is determined by his/her intention to perform the behavior and that this intention has, in turn, been a function of his/her attitude toward the behavior and his/her subjective norms (SN). Attitude and subjective norms have been shown to have a significant effect on behavioral intent and adoption of a new system (Punnoose, 2012; Schepers & Wetzels, 2007). By using Theory of Reasoned Action as a theoretical foundation, Davis (1985) created the TAM to focus on the domain of user acceptance of technology by replacing the attitudinal components of the theory with perceived ease of use (PEU) and perceived usefulness (PU). PEU is defined as the “degree to which the individual believes that using the system would require little or no mental and physical effort” (Davis, 1993, p. 477). PU is defined as the “degree to

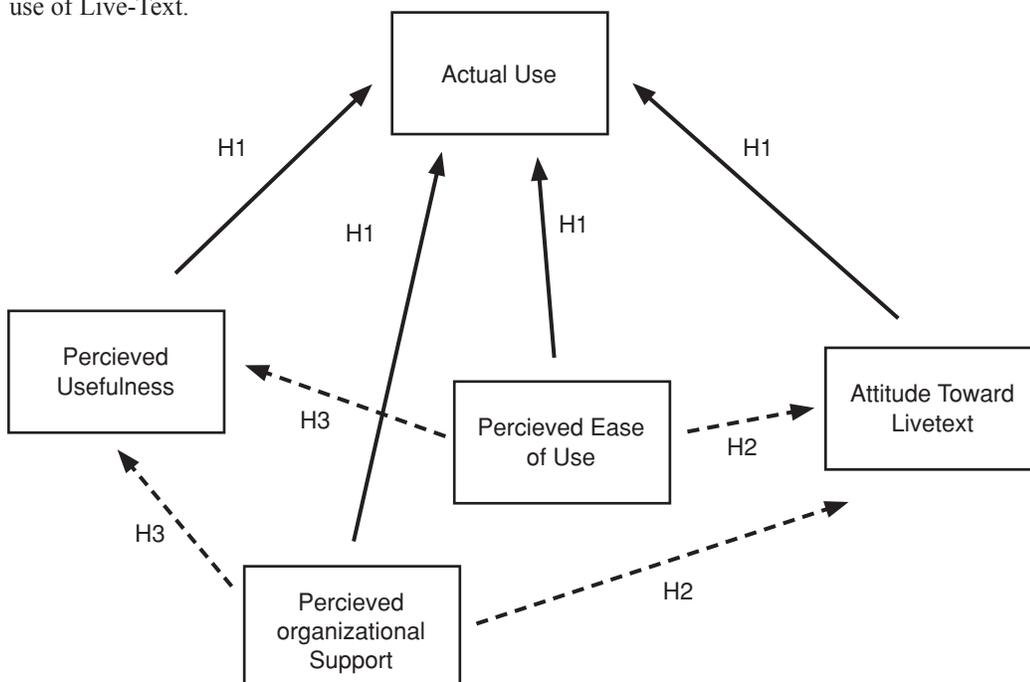


FIGURE 1: Hypothesized Motivation Acceptance Model

which an individual believes the use of a system could enhance job performance” (Davis, 1993, p. 477). The Technology Acceptance Model postulates that the intention to use technology is a function of perceived ease of use and perceived usefulness. Researchers have demonstrated that the intention to use a technology has been the strongest predictor of actual usage of technology. Intention to use a technology is more directly influenced by the individual’s perception of its usefulness, even if people did not have a positive attitude toward using the technology (Teo, 2016; Tsai, 2011).

A TAM is the simplest, easiest, and most powerful measure of technology usage (Chen, Sivo, Seilhamer, Sugar, Mao, 2013; Pan, Sivo & Brophy, 2003; Teo, 2016; Tsai, 2011). Van der Heijden (2003) described the TAM as “a parsimonious, theoretically and empirically justified model that is intended to explain the acceptance of information systems” (p. 541). TAM is a popular model for explaining the behavior of technology users and has been empirically demonstrated to have high validity in many research contexts (Chau, 1996). Venkatesh, Morris, Davis, and Davis (2003) compared the explanatory power between models, with or without extensions, and found that the explanatory power of the TAM increased as extensions were added to it.

The TAM allows researchers to locate the causes of technology resistance by focusing on behavioral constructs. Resistance can be defined as the propensity “to remain unaffected or undamaged by something” (O’Neill, 2001, p. 1050). Many employees in mandatory environments may rebel against harsh systems through passive resistance, such as talk in the hallways, and active resistance, such as sabotage or quitting. The challenge in researching the concept of resistance is finding the cause of the resistance in the organization (Sevier, 2003). It must be addressed when seeking a solution to employees’ resistance to technology. Both the nature of resistance and why it occurs deserve continued study because of the great impact technology has on organizations. Academic researchers must analyze factors related to training management and process implementation because the failure rate of these programs is high (Kotter, 1995). Gong, Xu, and Yu (2004) studied resistance to educational technology using

the TAM by measuring teachers’ technology acceptance using an expanded TAM that included computer self-efficacy as a behavioral construct. The research indicated that self-efficacy showed a strong direct effect on both perceived ease of use and intention to use. A strong relationship was found between computer self-efficacy on intention and users’ perceived ease of use. Hsieh (2015) examined employee resistance to a new cloud computing technology among healthcare professionals. The results suggested, “it is important to incorporate user resistance in technology acceptance studies” (p.1).

Although research indicates strong validity in the TAM (Chau, 1996), some critics believe it is too simple and has a limited number of constructs to describe behaviors that are intrinsic to the person, such as motivation. Mathieson (1991) pointed out that the TAM does not provide detailed information, but general opinions about the users and the system. Venkatesh and Davis (2000) have discussed that although the TAM can help predict acceptance, it does not always help researchers understand and explain employee’s acceptance of technology beyond attributing the system characteristics of ease of use and usefulness. TAM is not a descriptive model and does not provide diagnostic capabilities for finding flaws in the implementation of technology. Hence, there is the need to expand the model to find causes of technology resistance. Motivation has a strong relationship to goal achievement and the decision to learn and use a new program. Therefore, the authors propose to extend the TAM by using a motivational construct inspired by the CANE model of motivation. The CANE model is discussed next as an inspiration to expand the TAM to include motivation as an important aspect of new technology acceptance.

### **Commitment & Necessary Effort (CANE) Model of Motivation**

The CANE model is based on Ford’s (1992) motivational systems theory. It was developed by Clark (1998). The model describes motivation as “the organized interplay of three psychological functions that serve to direct, energize, and regulate goal-directed activity: Personal agency beliefs, emotional arousal processes, and task value” (Ford, 1992, p. 3). The original CANE model was intended to measure motivation in academic settings and has proven to be highly

accurate in predicting academic behavior (Condly, 1999). The CANE model has three factors: personal agency (self-efficacy and support from organization), affect, and task value. Condly (1999) found that these three factors explained a substantial portion of employee' commitment in academic motivation.

Personal agency incorporates self-efficacy and the belief that the organization supports an employee in a task. These perceptions can be positive or negative, and they influence an individual's motivation to accept a new technology, such as Live-Text. The question regarding agency would be: "Can I do this task under these conditions?" Bandura (1977) believed that behaviors were the determinants of a person's beliefs and that only if someone believed a behavior was possible would that behavior be produced. Self-efficacy describes the inward perception of the question: "Can I do this task?" It is formed from a variety of individual experiences. Organizational support is critical because it influences motivation and technology acceptance. The attitudes and beliefs of other group members shape behavior to use technology through communication. Social interactions generate meaning and understanding of group behavior patterns in a virtual environment (Preece, 2001; Tsai, 2011). The altering of political and social dynamics in the organization can change, and the acceptance of new ideas can reduce motivation (Abduljalil & Zainuddin, 2015; Kent, 2015).

An employee's attitude toward a technology is described as affect or emotional arousal in the CANE model, and it consists of two components: emotion and mood. Emotion is an individual's feelings produced by the task. Emotions play a key role in blocking acceptance of information technology (Clark, 1998). Mood focuses on the feelings an individual brings to the task. Emotion can be either positive or negative. The user feels a positive or negative emotion toward a subject. This measurement is critical, because an individual may feel that he/she can use a new technology and that the new technology would be useful, but could, nevertheless, dislike it and therefore reject it.

The task value component from the CANE model of motivation is composed of three constructs: importance, interest, and utility. The CANE

model defines the construct of importance as to how closely individuals identify themselves with the task. The question to be asked should be "Is this task important to me?" This construct will not be measured because it is unlikely that a respondent will personally identify with the online management software given the type of task in the study. Interest focuses on intrinsic rewards, such as enjoyment or curiosity, received by an individual engaged in a task (Clark & Estes, 2002). Interest leads to the internal motivation to overcome obstacles in the desire for an internal reward. The increase in internal motivation may ultimately lead to greater acceptance of technology. Utility addresses relevance that is subjective and individual to each user. Ford (1992) discussed the need for specific opportunities for the goal to be meaningful. These opportunities create meaning for the user and commitment to the new technology. The questions should be: "Is this worth my while?" and "Do I get anything out of this?" If the user perceives the task is valuable, then motivation and acceptance may ensue.

#### **Motivation Acceptance Model (MAM)**

The CANE model focuses on motivation but does not specify factors of technology acceptance. By itself, motivation is one factor in the acceptance of technology. A model derived from the fusion of the CANE model and the TAM may provide a better understanding of users' perceptions and their acceptance of the technology (Live-Text), because the former can explain how attitudes are influenced by motivational factors and the latter can provide information on the way users form attitudes based on technological characteristics. Past research has presented numerous examples of such expansions (Punnoose, 2012; Schepers & Wetzels, 2007; Tsai, 2011). However, there is limited research on the use of the TAM and motivational measures with academic faculty. As Davis (1993) demonstrated, technology acceptance is determined by a variety of motivators. In this study, the authors incorporated the robust CANE model into the TAM model to account for the motivational aspect of technology acceptance. This is congruent with the assertion that TAM must be integrated into a model that includes other variables such as change processes to functionally measure motivation. The TAM and the CANE model have been extensively tested and validated in areas other

than instructional technology. The proposed model is the MAM. The MAM combines factors of the CANE model and TAM to include actual use (AU), amount of actual use (AAU), attitude toward Live-Text (AT), familiarity with Live-Text (F), perceived usefulness (PU), perceived ease of use (PEU), and perception of organizational support (POS).

## METHODOLOGY

### Participants

The study participants were faculty who were selected from four major departments in the College of Education and were either utilizing Live-Text or had the intention of utilizing it. Of the 127 faculty members who were contacted, 59 completed the survey on whether they used Live-Text. Out of the 59 faculty members, 25 completed the user survey and 34 completed the nonuser survey. Out of the total 59 faculty who participated, 20 respondents (33.9%) were between the ages of 51 and 60, 30 respondents (66.1%) were females, 49 respondents (83.1%) were White, 44 respondents (74.6%) had worked in education for more than 6 years, and 26 respondents (47.5%) had been affiliated with the university for more than 6 years.

### Data Collection Instrument

Faculty members were given a survey depending on whether they were users or nonusers of Live-Text. The survey was developed based on the pertinent literature to measure their perceptions of Live-Text. All the participants knew about Live-Text. The surveys for users had more questions than nonusers because more information could be acquired from the former than latter. Information from users included frequency and familiarity of Live-Text. The surveys were constructed using a 5-point Likert-type scale (1 as “Strongly Disagree”, 2 as “Disagree”, 3 as “Neither Agree nor Disagree”, 4 as “Agree”, 5 as “Strongly Agree”, and N/A as “Not Applicable”) measuring the faculty members’ perception on the variables of MAM in the context of Live-Text and demographics questions (age, gender, ethnicity, length of time worked in the field and length of time faculty has been affiliated with the university). The survey also utilized Yes or No questions to determine who is using Live-Text and their familiarity with the functions of Live-Text. The survey consisted of the following measures:

- Actual Use (AU): AU measures “the individual’s behavior regarding the new system” (Davis, Bagozzi, & Warshaw, 1989). It measured whether a faculty is currently using Live-Text. AU was measured using one item with the statement reading “I use Live-Text” and the choices of “Yes” or “No.”
- Amount of Actual Use (AAU): It measured the frequency and duration of Live-Text use by the faculty. The frequency self-report scale was measured on a scale with 1 as “Less than once a week,” 2 as “Once a week,” 3 as “Twice a week,” 4 as “Three times a week,” and 5 as “More than three times a week.” The duration self-report scale was also measured on a scale with 1 as “Less than 30 minutes,” 2 as “Between 30-60 minutes,” 3 as “Between 60-90 minutes,” 4 as “Between 90-120 minutes,” and 5 as “More than 120 minutes.”
- Attitude toward Live-Text (AT): It measured how a faculty member feels toward Live-Text. Six items were used to measure AT (three items each for users and nonusers adapted from Davis, 1993).
- Familiarity with Live-Text (F): It measured the different functions utilized by faculty in Live-Text. The respondents were asked if they were familiar with or used Live-Text: an array of 26 items were used to measure having “Yes” and “No” responses.
- Perceived Usefulness (PU): In this study, PU measured faculty’s perception of the usefulness and the level of serviceability (utility) Live-Text provides. Seven items were used to measure PU (nine items for users and eight items for nonusers adapted from Davis, 1989).
- Perceived Ease of Use (PEU): In this study, PEU measured faculty members’ perception of how easy it is to use Live-Text and the perception of their own personal technological capabilities compared to how difficult they think Live-Text is to use (whether they have already used it because questions are based on perceptions. Seven items were used to measure PEU (four items for users and two items for nonusers adapted from Davis, 1989).

- Perception of Organizational Support (POS): It measured the faculty's perception of how supportive the university is toward the respondents' use and implementation of Live-Text. It also measures professors' perception on university's support for students utilizing Live-Text. Twenty items were used to measure POS.

### Data Analysis

Data analysis was conducted in five stages. In the first stage, internal consistency reliability analysis (Cronbach's alpha reported in Table 1) was conducted on the variables under investigation in SPSS. In the second stage, structural equation modeling (SEM) was used to test the direct and indirect relationships in the hypothesized theoretical model. The model was evaluated in statistical analysis software to find the pathway coefficients through multiple regressions. The third stage involved comparing Live-Text users and nonusers on the variables of interest by using independent-sample t-tests. In the fourth stage, MAM was reevaluated by using the number of

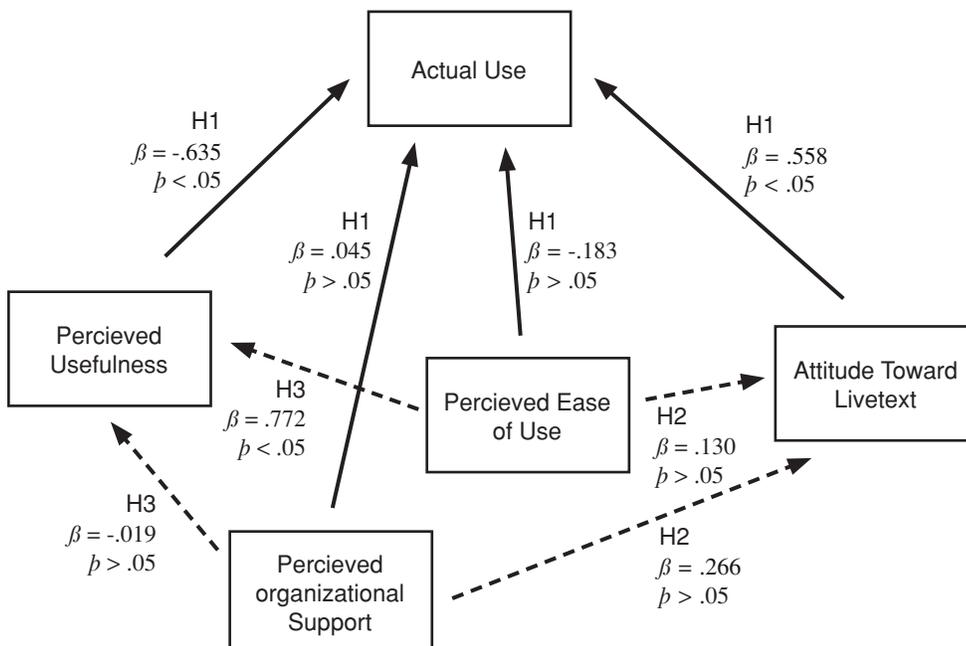
actual-use variables that determined how each variable (PEU, POS, AT, and PU) influenced the way each user utilized Live-Text. Only users were measured. The actual-use variables included how often a respondent used Live-Text (e.g., monthly, weekly, or daily), how long each use lasted (minutes or hours), and how many times the respondent used Live-Text during the semester. In the fifth stage, descriptive statistics were calculated for the Live-Text functions that users are aware of and whether they use these functions.

### RESULTS

The results section is arranged around the three hypotheses tested in the study followed by the independent t-test and Live-Text frequency results. The means, standard deviations and Cronbach's alpha coefficients of the measures are presented in Table 1. All the coefficients exceed 0.80. These four measures were deemed acceptable and valid. The path coefficients for the SEM is provided in Figure 2.

**TABLE 1:** Internal Consistency Reliability (Cronbach's Alpha)

Instrument	Cronbach's alpha	M	SD
Percieved usefulness	.97	5.05	6.77
Precieved ease of use	.93	4.71	5.69
Perception of organizational support	.88	11.76	4.67
Attitude toward	.99	3.37	4.50



**FIGURE 2:** Path Coefficients for the Structural Equation Model

### Hypothesis 1 Results

The independent variables in the SEM were AT, PU, PEU and POS and the dependent variable was AU. Regression analysis revealed that the model was statistically significant and predicted AT ( $F_{4,58} = 55.1, p < .05$ ) providing support for hypothesis 1. The  $R^2$  for the model was 0.80, and the adjusted  $R^2$  was 0.79. PEU ( $t = -2.24, p < .05$ ), PU ( $t = -6.84, p < .05$ ) and AT ( $t = 7.28, p < .05$ ) were a statistically significant predictor of AU, whereas POS ( $t = 0.71, p > .05$ ) was not a strong statistically significant predictor for AU.

### Hypothesis 2 Results

The independent variables in the SEM were PEU and POS and the dependent variable was AT. Regression analysis revealed that the model was statistically significant and predicted AT ( $F_{4,58} = 3.98, p < .05$ ) providing support for hypothesis 2.  $R^2$  for the model was 0.12, and the adjusted  $R^2$  was 0.09. PEU ( $t = 1.22, p > .05$ ) and POS ( $t = 2.00, p > .05$ ) were a statistically significant predictor of AT.

### Hypothesis 3 Results

The independent variables in the SEM were PEU and POS and the dependent variable was PU. Regression analysis revealed that the model was statistically significant and predicted PU of Live-Text ( $F_{4,58} = 42.95, p < .05$ ) providing support for hypothesis 3.  $R^2$  for the model was 0.61, and the adjusted  $R^2$  for the model was 0.59. PEU ( $t = 8.81, p < .05$ ) was a strong predictor of PU whereas POS ( $t = -0.18, p > .05$ ) was not a statistically significant predictor of PU.

### Independent t-Test Results

A series of  $t$ -tests were conducted to compare between users and nonusers within the MAM framework. The analyses focused on comparison of AT, PEU, POS, and PU. A  $t$ -test was used to compare PU of Live-Text between users and nonusers. A statistically significant difference ( $t_{58} = 7.08, p < .05$ ) was found between users and nonusers in their PU of Live Text. On average, users ( $M = 1.70, SD = 0.66$ ) displayed higher levels of PU than nonusers ( $M = 0.77, SD = 0.29$ ). A  $t$ -test was used to compare PEU of Live-Text between users and nonusers. A statistically significant difference ( $t_{58} = 8.10; p < .05$ ) was found between users and nonusers. On average, users ( $M = 2.09, SD = 0.59$ ) displayed higher levels of PEU than nonusers ( $M = 1.11, SD = 0.34$ ). A  $t$ -test was used to compare attitude toward Live-Text between users and nonusers. No statistically significant difference ( $t_{58} = -0.67; p > .05$ ) was found between users ( $M = 1.33, SD = 0.55$ ) and nonusers ( $M = 1.42, SD = 0.53$ ) in

their attitude toward Live-Text. A  $t$ -test was used to compare POS for Live-Text between users and nonusers. No statistically significant difference ( $t_{58} = -0.34; p > .05$ ) was found between users ( $M = 2.75, SD = 0.48$ ) and nonusers ( $M = 2.70, SD = 0.58$ ).

### Live-Text Frequency Usage Results Based on Date

Multiple regression analysis was performed between the Live-Text frequency (dependent variable) based on date and AT, PEU, POS and PU (independent variables). The model was statistically significant ( $F_{4,58} = 47.77, p < .05$ ) and predicted Live-Text usage based on dates.  $R^2$  for the model was 0.78, and the adjusted  $R^2$  for the model was 0.76. Attitude toward Live-Text ( $t = -7.03, p < .05$ ) and PU ( $t = 7.09, p < .05$ ) significantly predicted Live-Text usage, whereas PEU ( $t = 1.25, p > .05$ ) and POS ( $t = 0.05, p > .05$ ) did not. Respondents who said they perceived Live-Text as useful were more likely to use it. Interestingly, attitude toward Live-Text ( $t = -7.03, p < .05$ ) was an inverse predictor of how often a user would use Live-Text on a daily or weekly basis.

### Live-Text Frequency Usage Results Based on Semester

Multiple regression analysis was performed between the Live-Text frequency (dependent variable) based on semester and AT, PEU, POS and PU (independent variables). The model was statistically significant ( $F_{4,58} = 32.68, p < .05$ ) and predicted Live-Text usage.  $R^2$  for the model was 0.62, and the adjusted  $R^2$  for the model was 0.60. Attitude toward Live-Text ( $t = -4.77, p < .05$ ), PEU ( $t = 2.55, p < .05$ ) and PU ( $t = 3.16, p < .05$ ) significantly predicted Live-Text usage, whereas POS ( $t = -0.04, p > .05$ ) did not.

### Live-Text Frequency Usage Results Based on Duration

Multiple regression analysis was performed between the Live-Text frequency (dependent variable) based on duration and AT, PEU, POS and PU (independent variables). The model was statistically significant ( $F_{4,58} = 22.36, p < .05$ ) and predicted Live-Text usage.  $R^2$  for the model was 0.78, and the adjusted  $R^2$  for the model was .76, Figure 5 displays the standardized regression coefficients ( $\beta$ ) for each variable. Attitude toward Live-Text ( $t = -7.03, p < .05$ ) and PU ( $t = 7.09, p < .05$ ) were significantly predicted Live-Text usage whereas PEU ( $t = 1.25, p > .05$ ) and POS ( $t = 0.05, p > .05$ ) did not. Respondents who said they perceived Live-Text as useful were more likely to use it. Interestingly, attitude toward

Live-Text ( $t = -7.03, p < .05$ ) was an inverse predictor of how often a user would use Live-Text on a daily or weekly basis.

### Frequency of Usage for Each Live-Text Function

Faculty members utilized ( $n = 25$ ) the following Live-Text functions in order of decreasing frequency: Electronic portfolio (88%,  $n = 22$ ), Review Function (88%,  $n = 22$ ), Share Function (64%,  $n = 16$ ), Rubric Builder (44%,  $n = 11$ ), Assessment Reporting Tools (32%,  $n = 8$ ), Standards Library (32%,  $n = 8$ ), Standards Stamper (28%,  $n = 7$ ), Lesson Planner (28%,  $n = 7$ ), Forms Function (28%,  $n = 7$ ); Template Designation (24%,  $n = 6$ ), Exhibit Center (20%,  $n = 5$ ), Project Design (12%,  $n = 3$ ), and the United Streaming Video Resources (8%,  $n = 2$ ) (Table 2).

### DISCUSSION

One of the most critical challenges faced by management is the adoption of technology. Institutes of higher education spend significant amounts of resources to introduce new technologies for the benefit of faculty and students, but the adoption rates are poor (Anderson, 2012; Bousbahi & Alrazgan, 2015). New technologies that are not fully adopted increase the overall operational and logistical costs that may ultimately lead to discontinuation of the new technology, thereby depriving faculty, students, and the institution of its benefits. The purpose of this study was to investigate the correspondence between faculty members' attitude toward the use of Live-Text and their actual use of Live-Text by

**TABLE 2:** Frequency of Live-Text Function Usage

Name of function	Number of function users	Percentage of the sample
I am familiar with the Electronic Portfolio	25	100%
I am familiar with the Standards Stamper	12	48%
I am familiar with the Standards Library	13	52%
I am familiar with the Lesson Planner	19	75%
I am familiar with the Rubric Builder	22	88%
I am familiar with the Assessment Reporting Tools	15	60%
I am familiar with the Template Designation	15	60%
I am familiar with the Forms Function	8	32%
I am familiar with the Project Design	7	28%
I am familiar with the Share Function	20	80%
I am familiar with the Review Function	20	80%
I am familiar with the United Streaming Video Resources	8	32%
I am familiar with the Exhibit Center	10	40%
I use the Electronic Portfolio	22	88%
I use the Standards Stamper	7	28%
I use the Standards Library	8	32%
I use the Lesson Planner	7	28%
I use the Rubric Builder	11	44%
I use the Assessment Reporting Tools	8	32%
I use the Template Designation	6	32%
I use the Forms Function	7	28%
I use the Project Design	3	12%
I use the Share Function	16	64%
I use the Review Function	22	88%
I use the United Streaming Video Resources	2	8%
I use the Exhibit Center	5	20%

using the MAM model. The findings of this study are important because there is tremendous resistance to new technology in institutions of higher education around the world (Abduljalil & Zainuddin, 2015). University employees must stay competitive with modern technologies and resources. The SEM analyses provided support for all the three hypotheses. Perceived ease of use was a statistically significant predictor of the faculty's liking Live-Text and finding it useful. Live-Text users had higher scores on finding Live-Text useful, liking it, and finding it easier to use when compared to nonusers. Attitude toward Live-Text significantly predicted Live-Text usage based on date, semester, and duration. Perceived organizational support was a significant predictor of attitude toward Live-Text. Users of Live-Text had higher means for perceived usefulness and perceived ease of use than nonusers to a statistically significant degree. Most of the study participants widely utilized the electronic portfolio, review function, share function and rubric builders in Live-Text. The results of this study were consistent with previous studies that used motivational constructs with the TAM (Abduljalil & Zainuddin, 2015; Chen et al., 2013; Smith & Sivo, 2012).

The results of our study were different from a study conducted by Bousbahi and Alrazgan (2015) with regards to organizational support. Bousbahi and Alrazgan (2015) examined personal constructs such as motivation, load anxiety, and organizational support in the TAM to understand the reasons for faculty resistance to the adoption of a new Blackboard LMS in an institute of higher education. The authors found a significant relationship between organizational support, motivation, and perceived usefulness, because the faculty received e-learning organizational support from the dean to adopt Blackboard in the form of training and other support. The authors found an inverse relationship between the faculty's perceived usefulness and the actual use of Live-Text. In simpler terms, the more a faculty member used Live-Text, the less useful he/she found it. This finding points to numerous questions that the university should address because that might be the key to why some faculty resisted implementation of Live-Text. There may be challenges to the software such as difficult interfaces, slow response time, or other repairable issues that the university administration and IT could address. Another challenge may be the responsibilities associated with the software. The results indicate that

organization was not a significant predictor for perceived and actual usage. The lack of organizational support should be thoroughly researched because a positive relationship with the organization and end user will provide a smoother implementation of Live Text than a demanding or draconian environment where software implementation becomes a forced responsibility. Perceptions of organizational support can change with proper positive motivators, such as rewards for early adopters and praise for using the system.

### **Implications for Research**

This study has several research implications. A primary contribution is the combination of technology acceptance model and the CANE model of motivation to examine how faculty assess and accept an overall change in relation to the implementation of a new technology (Live-Text). By employing a dual perspective, the study contributes by operationalizing and testing the hybrid motivation acceptance model by assessing faculty's perception and attitude toward Live-Text itself and the organizational support that they expect to receive. Hence, theoretical insights for researchers that may assist faculty as well as students to utilize a new education-based IT application are provided. This study suggests that attitude, perceived ease of use, perceived usage, and perceived organizational support are important factors facilitating frequency of usage for university faculty members who are trying to adopt a new technology. This finding could be of use to future researchers who are trying to build a new technology acceptance and resistance model which could explicitly conceptualize and measure individual-level factors that increase or decrease user resistance. Attitude was a strong predictor for use of Live-Text. Further research into the early and positive adaptors may show patterns of use that can be shared with other users. If positive users have techniques or habits associated with the software, they can share these new techniques and provide a more positive environment for other users. Perceived ease of use was a predictor for how useful employees thought Live-Text was. Further research could determine why end users may perceive Live-Text as difficult or easy and provide information to address perceived facts and myths about its implementation.

A longitudinal analysis of how resistance and motivational constructs change over time would be worthwhile to study because the influence of these constructs may vary during the different

phases of new technology implementation. Variables that have a positive or a negative influence on resistance (e.g., reactance, distrust, scrutiny, inertia, rewards, incentives) should also be analyzed in conjunction with motivational constructs in the TAM to understand the processes and conditions that lead to faculty resistance (Ngafesson, 2015) when adopting a new technology in the university. The hybrid MAM model can be applied to examine the influence of students' resistance and motivation when adopting a new technology. Furthermore, it would be useful to examine the mediating and moderating influence of resistance and other motivational constructs on faculty's behavioral intention, which, in turn, might influence usage behaviors. Abduljalil and Zainuddin (2015) conducted a similar study where a Chief Executive Officer's attitude mediated the relationship between his/her trust in adopting an accounting information system technology and their behavioral intention. All the factors mentioned can provide a positive environment for the implementation of Live-Text by customizing an instructor-led and web-based program with supporting publications. A solution to resistance to technology can be found by addressing the areas of concern through continued research and by applying the results to new solution initiatives.

### Implications for Practice

This research can be the foundation for building training initiatives designed to support faculty in overcoming the true causes of resistance and enhancing their motivation through organizational support. The study provides suggestions for the university administration to alleviate faculty resistance to utilizing Live-Text. The study suggests that both technological and motivational factors simultaneously influence usage and acceptance of Live-Text. The university administration should demonstrate the advantages of Live-Text to the faculty by providing adequate resources to utilize the system. Higher administration should focus more on creating an environment that ensures that faculty members have a positive attitude and the requisite organizational support to utilize Live-Text. Furthermore, that Live-Text should be made more user-friendly is consistent with the current faculty needs, so that they will use it with ease and can develop a positive attitude toward the system. Faculty can be motivated to use a new technology such as Live-Text by engaging in well-constructed training programs with motivational, positive, and informed instructors.

Some possible solutions may be increasing perceptions of how easy Live-Text is to use and increasing the positive support, commitment, and feedback from faculty in the implementation plus the administration and improvement of Live-Text. These may increase its acceptance and thus reduce resistance toward it.

### Limitations

Limitations affected this study in certain aspects. First, the task value component of the CANE model was not incorporated in the MAM model, because Live-Text was a new technology that was introduced in the university. Faculty would only be able to better express their opinion on the importance, interest and utility of Live-Text after they have used it for some time. Second, the authors utilized convenient sampling. This study was an isolated observation of faculty members' opinions in one college at a single university with a specific population using one type of software. The results may or may not apply to other organizations, and this affects external validity. Additional research should take place on user resistance to new technologies. Third, the data was collected through self-report measures; therefore, social desirability bias might influence the results. Fourth, internal validity may have been hindered because there was faculty resistance to fill out the surveys due to active resistance (where they would directly say "no") and passive resistance (where they would give excuses such as "I don't have the time"). Respondents could have had biased or unresponsive opinions based on the structure of the survey. Incorporating qualitative research techniques such as case studies and anecdotal reporting could improve consistency in future studies.

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