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Exploring EFL University Students' Acceptance of E-learning Using TAM

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Abstract

This study looked to measure learner perceptions and acceptance of the utilization of *Google Sites* (GS) as a *Course Management System* (CMS) in a blended learning EFL context. Learners were expected to utilize the GS CMS in order to access multiple resources and materials, and to complete activities necessary for meeting course requirements. To investigate learner attitudes and tolerance of the GS CMS, an adapted questionnaire of the *Technology Acceptance Model* (TAM) was used. TAM has been widely utilized in research studies to examine users' perceptions of *Usefulness*, *Ease of Use*, *Attitude*, and *Behavioral Intentions* towards various *E-Learning* tools and various other technologies. Based on the results from 35 Japanese EFL university students, learners displayed moderately positive responses towards utilizing *Google Sites* as a CMS. Additionally, the results showed positive and significant relationships for each TAM construct validating all research hypotheses.

Key words: Learner attitudes, blended learning, E-learning

I. Introduction

In the current era of ever-changing innovations in technology to meet the needs of digital learners, higher education institutions worldwide have seen the dynamics of the traditional classroom rapidly evolve along with it. Within *English as a Foreign Language* (EFL) contexts specifically, educators have been moving away from

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the traditional *Computer Aided Language Learning* (CALL) pedagogy, where courses are centered around CALL itself, and more towards integrating CALL courseware as a tool for learning (Hinkleman, 2005). In line with this, further research has led to new pedagogical approaches in *E-learning* like *Web Enhanced Learning* (WEL), which augments available internet technology tools to create student-centered learning environments (Mills, 2006). WEL essentially supplements, rather than replaces, course content in traditional class settings and is meant to help create a blended learning environment that provides new opportunities that both meets learner demands for technology use, but also engage and help them learn beyond traditional classroom boundaries. The rationale for this shift in pedagogy is to allow learners more control and responsibility over their learning by providing opportunities to learn anytime, anywhere (Tselios, Daskalakis, & Papadopoulou, 2011) as this approach seems to have positive outcomes on learner effectiveness (Chou & Liu, 2005).

Across numerous higher education institutions worldwide, highly regarded *E-learning* tools like *Course Management Systems* (CMS) and *Learning Management Systems* (LMS) such as *Moodle* (open-source) or *Blackboard* (commercial) are rapidly being employed in various courses (Al-Busaidi & Al-Shihi, 2010; McGill & Klobas, 2009; Schoonenboom, 2014). The availability of CMSs and LMSs to help facilitate learning in blended learning contexts is viewed as vital to any successful *E-learning* implementation (Paulsen, 2003).

Despite the obvious advantages various *E-learning* tools provide learners, simply implementing new learning approaches into traditional courses does not guarantee success. While many universities worldwide regularly provide various *E-learning* or other WEL services within their courses, not considering how learners perceive and participate in these blended learning environments and how to best apply an effective *E-learning* strategy to improve the learning process (Kohang and Durante, 2003) will likely lead to difficulties in delivering quality courses. Moreover, a critical factor to successfully adopt and implement a quality *E-learning* environment requires learner involvement and an understanding of their acceptance of the technology itself (Butorac, Nebic, & Nemcanin, 2001; Tselios, Daskalakis, & Papadopoulou, 2011). Not surprisingly then that a number of studies have been conducted over the years to examine which factors influence learner attitudes toward various *E-learning* tools (Liaw, 2008; Liaw, Huang, & Chen, 2007; Lin, 2007; Ong & Lai, 2006; van Raaij & Schepers, 2007; Selim, 2003).

As interest in, and demand for, providing effective *E-learning* tools within blended learning environments grows, so does the need to examine learners' attitudes toward them with a view to help educators, especially within EFL contexts, successfully implement such technologies in their courses. Currently, little to no re-

search within EFL contexts has investigated learner reactions to CMSs as an additional *E-learning* tool in a blended learning setting in Japan. Moreover, very few studies have utilized the *Technology Acceptance Model* (TAM), one of the most widely and vetted models for measuring and predicting user intentions and perceived behaviors of technology (Venkatesh, 2000), within Japanese learning contexts. In line with this, the purpose of this research is two-fold: First, to investigate Japanese EFL learners' acceptance and intention to use a *Google Sites* CMS platform using four TAM variables: (a) *perceived usefulness* (PU), (b) *perceived ease of use* (PEOU), (c) *perceived attitude towards use* (ATU), and (d) *behavioral intention* (BI); and second to measure the learners' overall perceptions of the CMS in a blended learning context.

II. Review of Literature

1. Defining management systems

Because a countless number of acronyms and various nonstandard definitions for multiple management systems exist throughout academic literature (Watson & Watson, 2007), terms such as LMS, CMS, and *Content Management Systems* (CMS) along with *Learning Content Management Systems* (LCMS) are regularly used interchangeably (Sanprasert, 2010). However, while all of these systems share similar features, the ambiguity surrounding the differences of these various management systems is confusing, and for the scope of this paper, it is important to provide brief definitions of these terms and discuss some of the subtle differences in order to establish why one management system was chosen over others. For the purpose of this study, *Google Sites* was utilized exclusively as a *Course Management System* (CMS) in an EFL blended learning environment.

2. Content vs. Course Management Systems

In short, *Content Management Systems* are data repositories and function primarily like websites. These systems focus on managing various content from images and electronic documents to audio and visual files and providing access to them. However, *Course Management Systems*, which establish *E-learning* environments, are more complicated in that they, "integrate content delivery, communication, learner activities, collaborative work, feedback, testing, portfolio development, groupware tools, and administrative tools for the instructor" (Collis & Strijker, 2003, p.1). While Hall (2002 b) believes that a *Content Management System*, "stores and distributes the right content to the right learner at the right time" (p.248), Jones (2001) best defines the differences of these two systems by arguing against *Content Management Systems* by concluding,

CMSs do not work well for learning because they are designed for basic information transfer. They simply identify the user and deliver pieces of content associated with that user. E-learning, on the other hand, requires systems that account for such complexities as a course's level of difficulty, whether a learner has completed the necessary prerequisites and whether that person learns best by reading, listening, or doing (p.24).

3. Learning vs. Learning Content Management Systems

Commonly utilized in higher education settings, *Learning Management Systems*, "utilize synchronous and asynchronous technologies for the purpose of delivering educational content and facilitating communication between course participants" (Toland, White, Mills, & Bolliger, 2014, p.222). Additionally, according to Irlbeck and Mowat (2005), LMSs help learners to interact with *E-learning* tools and other similar resources in order to enable them to plan and monitor their learning progress. Although *Course Management Systems* are similar to LMSs as they allow learners to access *E-learning* environments, Ferriman (2012) postulates that LMSs are more dynamic and advantageous than CMSs as they not only provide administrative functionality, but also integrate learning objectives designed to benefit the user, whether that be students or company employees, which CMSs lack.

LCMSs, on the other hand, seem to be defined by the differentiation between content management and experience of the learner. Meaning, a key difference between an LMS and an LCMS depends on the target user. Learners themselves use LMSs for learning, while users of a LCMS are the content creators. LCMSs are primarily used to create, store, and organize large amounts of content created by multiple collaborators. Irlbeck and Mowat (2005) conclude that LCMS do not replace LMSs, but in fact, can complement them. Within educational contexts, LCMSs can be created to enable an entire institution to house large amounts of content for *E-learning* created by multiple teachers and educators alike. As a specific example, Kwansai Gakuin University has created and implemented *Luna* to function as its LCMS, which then allows teachers to individually create LMSs to implement and manage course content for each of their individual courses.

4. Google Sites

Google Sites (GS) was chosen as the CMS platform for several classes involved with the current study. The researcher made several considerations before deciding to use GS as CMSs. Firstly, GS is free to use and only requires the creation of a G-mail account as a prerequisite for creating a site. Secondly, the ability to create a GS does not require a user to have any knowledge of programming skills such as coding. Thirdly, from an administrative or managerial point of view, functionality

and navigation throughout GS is simplified and allows for easy creation and organization of content. Lastly, and most importantly, while GS lacked functionality such as the ability to track student progress or to allow students to communicate synchronously like an LMS can, it provided enough necessary functionality as a CMS to meet the requirements for each course. Specifically, students had access to course syllabuses, teacher lecture notes, *PowerPoint* presentations, selected *YouTube* videos, links to surveys via *Google Forms*, and homework assignments, which included audio files — all within one CMS platform. Additionally, GS also provides a collaborative functionality, which also allowed students to work on assignments together outside the classroom and then post them upon completion within GS.

5. Theoretical Framework

The framework for this research study was adapted from the *Technology Acceptance Model* (TAM) by Davis (1989). For over 25 years, numerous studies have utilized TAM to research how users accept technology (Alharbi & Drew, 2014; Teo & Noyes, 2011). The intention of TAM was to identify and explain predictors of acceptance across numerous technology systems among various users with five variables used to examine user attitudes: (a) *perceived usefulness* (PU), (b) *perceived ease of use* (PEOU), (c) *attitudes toward use* (ATU), (d) *behavioral intention* (BI), and (e) *actual use* (AU). Of the five variables, the first three, PU, PEOU, and ATU are considered predictors for BI and AU and that the predictors PU and PEOU are the most influential elements of the model (Toland, White, Mills, & Bolliger, 2014). McCarthy and Halawi (2010) surmise best the essence of TAM by concluding that the more users are willing to accept the technology, the more likely they will use it.

While numerous studies (Hsu, Wang, & Chiu, 2009; Lee, Cheung, & Chen, 2005; Ong, Lai, & Wang, 2004; Park, 2009; Saadé & Bahli, 2005; Tselios, Daskalakis, & Papadopoulou, 2011) have examined learner attitudes toward *E-learning* using TAM, fewer studies have used TAM in L2 contexts. Among several recent studies, Toland, White, Mills, and Bolliger, (2014) examined faculty members' usage and attitudes toward a commercial LMS implemented at several Japanese universities with positive results. Similarly, Dizon (2016) measured Japanese university students' attitudes and acceptance of *IBT TOEFL* testing and also reported favorable results. In other TAM studies, Mah and Er (2009) investigated Malaysian ESL students' perceptions of using *weblogs* for writing, while Soleimani, Ismail, and Mustaffa (2014) examined the attitudes of postgraduate ESL students in Malaysia toward *mobile assisted language learning* (MALL).

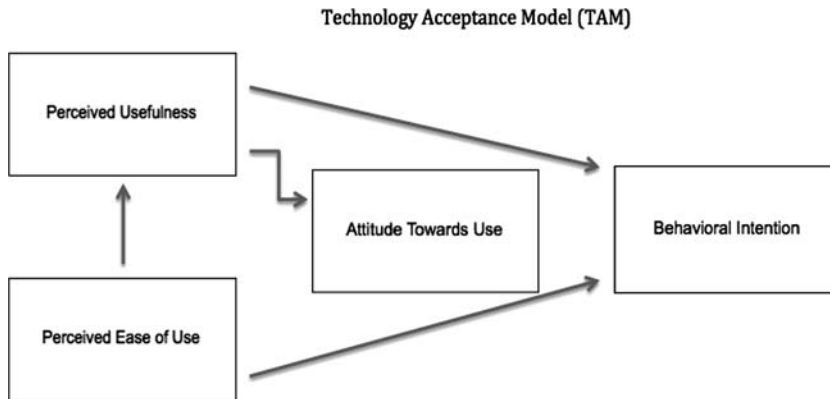


Figure 1 Technology Acceptance Model (Adopted from Davis et al., 1989)

6. Research Hypothesis

Based on the research objectives reported earlier and the aforementioned literature, a set of five hypotheses for this exploratory study were proposed:

- H 1: There is a positive and significant relationship between PU and BI to use GS in a Japanese EFL classroom.
- H 2: There is a positive and significant relationship between PEOU and BI to use GS in a Japanese EFL classroom.
- H 3: There is a positive and significant relationship between PU and ATU of GS in a Japanese EFL classroom.
- H 4: There is a positive and significant relationship between PEOU and PU of GS in a Japanese EFL classroom.
- H 5: There is a positive perception among Japanese EFL students concerning PU, PEOU, ATU, and BI to use GS.

III. Methodology

1. Instrumentation

This study utilized a quantitative survey method to collect data related to PU, PEOU, ATU, and BI. To ensure content validity, questionnaire items were adapted from existing TAM research (Alharbi & Drew, 2014; Davis, 1993; Ong, Lai, & Wang, 2004; Pan, 2003;) that have shown specific evidence of validity and reliability. Where necessary, some changes in wording were made in order for questionnaire items to fit the context of the current research. In line with research by Sekaran and Bougie (2010) who postulate that problems associated with wording ambiguity and meaning can significantly influence data accuracy, survey items for this research were pre-tested for accuracy by three native English-speaking EFL pro-

fessors.

The research instrument consists of two main sections. The first section asks participants for their demographic information and contains 4 items such as gender, year, academic department, and previous experience with CMSs or similar technology. The second section relates to TAM constructs assumed to impact the acceptance and adoption of technology. This section contains 15 related TAM items. The measurement items include *Perceived Ease of Use* (5 items), *Perceived Usefulness* (5 items), *Attitude Toward Usage* (3 items), and *Behavioral Intentions* (2 items). For this section, participants were asked to indicate their level of agreement or disagreement to the items based on a seven-point Likert scale ranging from strongly disagree (1) to strongly agree (7). Based on previous research by Lee, Jones, Mineyama, & Zhang (2002), a seven-point Likert scale was employed in this study as Japanese participants in particular tend to respond to survey items with higher degree of accuracy when there are seven choices.

2. Implementation and Procedure

As all classes taught by the researcher utilized a department-wide English-only policy, English was the designated language on the questionnaire, keeping in line with current policy. Additionally, participation in the study was voluntary and data was collected anonymously. Prior to implementing the questionnaire, participants were informed of the type of data being collected and the purpose for conducting the research.

Research by Hackbarth, Grover, and Yi (2003) proclaim that through direct experience with using technology, user knowledge and confidence improves and thus they will generally perceive it more favorably. Based on this information, the researcher provided the participants with an introductory presentation on *Google Sites* in the beginning of the semester and explained how they would utilize it as a CMS. The researcher also gave an overview of the functionality within *Google Sites* and how to use it. The participants were then encouraged to trial the *Google Sites* course CMS on their own for one week to familiarize themselves with its functionality firsthand before being required to use it for course tasks and assignments. At the end of the semester, *Google Forms* was utilized as the medium for administering the questionnaire and was distributed online via participant school-sponsored emails, which contained a URL link to the survey. The participants were given a week to complete the survey in order to afford each of them sufficient time to complete the questionnaire at their own pace.

3. Participants

Data were collected from a total of 35 participants from a private university in

Japan where the researcher is currently employed. During the course of the study, the participants, 22 (63%) females and 13 (37%) males, were taking English courses ranging from Intensive English and TOEFL to specific high level content-based classes. Additionally, the participants varied from year and department. By year, 23 (66%) were first year students, 9 (26%) were second year, and 3 (8%) were in their third year. By department, the participants came from a total of 11 different departments with *Commerce* and *International Studies* represented the most with 6 (17%) participants from each department. *Law, Literature, and Sociology*, 5 (14%) departments had the next largest representation with *Business*, 3 (9%), *Humanities* and *Economics*, 2 (6%), and *Education* 1 (3%) comprising the other departments. As far as experience with using CMSs or other similar technology for education, the majority 20 (57%) had less than six months, with 12 (34%) less than 1 year, and 3 (9%) between 1-3 years respectively.

4. Sampling technique

When data collection from an entire population is deemed not feasible, sampling is a valid technique to draw research conclusions based on a smaller representation of the total participants (Jemain, Al-Omari, & Ibrahim, 2007). In the current study, all participants were enrolled in courses taught directly by the researcher, therefore, employing non-probability convenience sampling. This sampling technique was utilized as it is more commonly used when analyzing technology acceptance, while also ensuring a greater response rate from participants in a short amount of time (Alharbi & Drew, 2014).

IV. Results & Discussion

Statistical Package for Social Sciences (SPSS) software, version 23.0 (SPSS, 2014) was used to analyze the collected data. While there are legitimate concerns regarding recycled items, Hyman, Lamb, and Bulmer (2006) contested that questions that have previously been pre-tested to confirm if they accurately measure the desired constructs often have a high level of validity. A reliability analysis was conducted with Cronbach's alpha (α) to investigate the internal consistency reliability of the 15 statement items that make up section two of this study's questionnaire. According to Nunnally (1967), a Cronbach alpha of 0.7 is considered an acceptable threshold for reliability. Based on the results in Table 1 below, each of the four constructs produced high values, exceeding 0.7, demonstrating a strong internal consistency and thus confirming Hyman, Lamb, and Bulmer's conclusions.

Table 1 Cronbach's alpha of PU, PEOU, ATU, and BI Constructs

Construct	Number of items	Cronbach's alpha (α)
Perceived Usefulness (PU)	5	0.908
Perceived Ease of Use (PEOU)	5	0.895
Attitude Towards Use (ATU)	3	0.922
Behavioral Intention (BI)	2	0.819

Table 2 below shows the Pearson's correlation coefficients (r) between PU, PEOU, ATU, and BI. According to Evans (1996), a Pearson's correlation coefficient value between .60 and .79 is considered strong. As shown in Table 2, there was a positive correlation between PU and BI ($r = .745$, $p < .01$), signifying a strong relationship between the two variables, which confirms that the first hypothesis has failed to be rejected. The high correlation between PU and BI support previous findings (Liaw, 2008; Sánchez-Franco, Martínez-López, & Martín-Velicia, 2009) and suggests that the participants recognized the usefulness of the technology, which directly influenced their intention to use it (Mar & Er, 2009).

Additionally, the second hypothesis has also failed to be rejected as there was a strong correlation between PEOU and BI ($r = .671$, $p < .01$), but this relationship was not as high as the relationship between PU and BI, which supports the conclusions made by Byoung-Chan, Jeong-Ok, and In (2009); Eagly and Chaiken (1993); Fazio and Zanna (1978); and Lee, Kozar, and Larsen (2003) that the variable PU, rather than PEOU, is a stronger predictor of BI for users of newly implemented technology. Specifically, Lee, Kozar, and Larsen (2003) postulate that PEOU is an important antecedent of PU and can affect the acceptance of technology indirectly through PU. Additionally, since PU mainly mediates PEOU, Adams, Nelson, and Todd (1992) also add that PEOU is generally less important in determining the technology use or behavior even though PEOU might influence the initial interest in adopting new technology.

Regarding the third hypothesis, there is a strong correlation between PU and ATU ($r = .637$, $p < .01$). Thus, the third hypothesis failed to be rejected as well. Interestingly, however, while the correlation between PU and ATU is strong, which seems consistent with findings by Ngai, Poon, & Chan (2007), who concluded that both PEOU and PU were important factors that influenced attitude towards using technology, it is not as strong as the relationship between PU and BI. In fact, the findings of this study better support the conclusions made by Mah and Er (2009) who believed that attitude might not be as important for accepting technology when considering usefulness as a variable. In fact, Wagner and Flannery (2004), also proclaimed that BI is the strongest indicator whether there is a direct effect on user ac-

ceptance or not, so it is not surprising that PU and BI have a higher relationship than PU and ATU, even though the latter does have a strong correlation. These findings also seem to contradict Tzeng (2011), who proclaimed that attitude was the strongest indicator towards intentional usage.

For the fourth hypothesis, PEOU and PU, there is a positive and significant relationship ($r = .721$, $p < .01$), indicating that the fourth hypothesis has also failed to be rejected. From the results, it can be determined that PU and PEOU can strongly influence the behavioral acceptance of a technology. However, Davis (1989) also emphasizes that learner acceptance of any technology is determined by whether it has important or critical functionality deemed beneficial for learning. Thus, according to Dixon (2016), it is vital that educators effectively convey the various benefits that *E-Learning* tools, in this case CMSs, afford in order for them to be meaningfully perceived by students.

Table 2 Pearson's Correlation Matrix for PU, PEOU, ATU, and BI Constructs

		PU Group	PEOU Group	ATU Group	BI Group
PU Group	Pearson Correlation	1	.721**	.637**	.745**
	Sig. (2-tailed)		.000	.000	.000
	N	35	35	35	35
PEOU Group	Pearson Correlation	.721**	1	.693**	.671**
	Sig. (2-tailed)	.000		.000	.000
	N	35	35	35	35
ATU Group	Pearson Correlation	.637**	.693**	1	.627**
	Sig. (2-tailed)	.000	.000		.000
	N	35	35	35	35
BI Group	Pearson Correlation	.745**	.671**	.627**	1
	Sig. (2-tailed)	.000	.000	.000	
	N	35	35	35	35

** . Correlation is significant at the .01 level (2-tailed).

Table 3 below presents the average mean and standard deviation for each TAM construct. For the first variable, PU, the mean is 5.07 which falls between somewhat agree (5) and agree (6). This indicates that Japanese EFL learners had slightly moderate views in favor of a *Google Sites* CMS usefulness. While the perceptions are moderate, they are positive, which means that the participants saw value in its usefulness.

Regarding PEOU, the average mean (4.97) is slightly lower than PU, but leaning more towards somewhat agree (5), which is still favorable. The responses here to PU and PEOU seem in line to the responses found in the study by Dixon (2016) who also investigated Japanese EFL learners' perceptions of technology using TAM.

The responses found in both studies can best be summarized by Davis (1993) who concluded that as long as users perceive a technology to have important functionality useful for completing tasks, they are willing to tolerate some difficulties related to ease of use.

Finally, ATU had a mean of 5.28, higher than BI (4.88) and the highest among all the four constructs. For both ATU and BI, the participants had slightly moderate, but positive views. The responses to both are slightly surprising since, as previously discussed above, ATU is not considered the strongest indicator that technology will be accepted, instead BI is. This seems to demonstrate that Japanese EFL learners specifically have very positive attitudes toward utilizing new technology and are willing to give it a try, regardless of whether they have had any previous experience or exposure to it or not. Furthermore, studies by Taylor and Todd (1995) and Morris and Dillon (1997) concluded that learner attitudes can positively affect behavioral intention to use a technology, yet the average responses for BI were only slightly below item choice, somewhat (5), indicating that the participants' willingness to use *Google Sites* as a CMS did not necessarily positively influence or equate the same for behavioral intention. It seems reasonable to assume that other factors outside the scope of this research might have influenced participant responses and further research is needed to address these other factors (see *Limitations*).

The results overall in Table 3, with the unusual responses to ATU and BI notwithstanding, demonstrate that Japanese EFL learners had moderately positive views for PU, PEOU, ATU, and BI towards *Google Sites* as a CMS, and as a result, the fifth hypothesis has also failed to be rejected.

Table 3 Mean and SD of PU, PEOU, and BI

	N	Mean	Std. Deviation
PU	35	5.07	1.04
PEOU	35	4.97	1.05
ATU	35	5.28	1.14
BI	35	4.88	1.06

V. Conclusion & Limitations

This study looked to explore factors that influenced the acceptance of *Google Sites as a CMS* from the perspective of Japanese university students. From the TAM theoretical perspective, the two belief constructs (perceived usefulness and perceived ease of use), and their relationships to attitude and behavioral intention were analyzed. No unusual findings were found regarding the TAM constructs, thus, successfully confirming the applicability of TAM in a Japanese higher education

context. Furthermore, based on the analysis of results, the five proposed hypotheses were confirmed. Among the variables under study, it seems that although students had limited prior experience with CMSs or similar technology they did not perceive *Google Sites* as a CMS as difficult to use, which clearly indicates that the easier students perceive *E-Learning* to be, the more they will view it as useful. Similarly, attitude towards continued use of the implemented technology will be further reinforced as long as it is designed to deliver value. These results are very consistent with previous research conducted indicating the similar nature of how learners perceive *E-Learning* and other similar technologies.

The implications of this study can best be surmised by the following conclusions. First, this study contributes to the continuous efforts to validate TAM in Asia and specifically Japan. Moreover, the positive results from this study of the TAM theoretical framework within Japanese EFL contexts demonstrates that the framework can be utilized by other educators to predict behavioral intentions of *E-Learning* technologies prior to implementation, which will benefit future course planning and successful adoption of similar technology.

While the results of this exploratory study are deemed successful, it is not without its limitations. Of particular importance is the short exposure time using *Google Sites* as a class CMS as the participants only accessed and utilized the technology for one semester. Therefore, future studies should look towards more longitudinal research to further validate and predict the behavioral intentions of students to use such technology and to better understand the relationships of the TAM variables being measured. In addition, only the main constructs of TAM were adopted and measured in this study. However, external factors like accessibility, learner anxiety, and learner familiarity with using technology should be considered to find out how, if at all, they influence PU, PEOU, ATU, and BI. Finally, the current study did not include any comparative research in which the participants' pre- and post-perceptions of the technology's value and ease of use were measured. Future studies should consider this approach in order to provide more comprehensive research and to further validate TAM within EFL contexts.

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