International Journal of Education and Practice
2019 Vol. 7, No. 3, pp. 112-122
ISSN(e): 2310-3868
ISSN(p): 2311-6897
DOI: 10.18488/journal.61.2019.73.112.122

DO TEACHERS' ATTITUDES, PERCEPTION OF USEFULNESS, AND PERCEIVED SOCIAL INFLUENCES PREDICT THEIR BEHAVIORAL INTENTIONS TO USE GAMIFICATION IN EFL CLASSROOMS? EVIDENCE FROM THE MIDDLE EAST

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Article History
Received: 9 January 2019
Revised: 25 February 2019
Accepted: 29 March 2019
Published: 23 May 2019

Keywords
EFL teachers
Behavioral intention
Attitude
Perceived usefulness
Social influence
Gamification
Public schools

ABSTRACT

To motivate learners, teachers of English as a foreign language (EFL) are encouraged to use gaming elements, which can stimulate students take a more active role in the learning process. There are many free and informal online applications now available to support this model, but not all EFL teachers, particularly female ones, are inclined to introduce gamification. Three essential variables that may influence their behavioral intentions to use gamified applications are attitude, perceived usefulness, and perceived social influence, which this study aims to investigate. This is a quantitative study based on a sample of 157 female EFL teachers. The data was collected through a questionnaire, the results of which indicate that attitude, perceived usefulness, and perceived social influence are significant predictors of teachers' behavioral intentions to use gamification.

Contribution/Originality: This study is one of only a few that has investigated the factors influencing female teachers' behavioral intentions to use gamified applications in Saudi schools. It contributes to the existing body of literature by providing empirical evidence on how the expectations of those around us, together with our attitudes and perceived usefulness, affect our decisions.

1. INTRODUCTION

The use of games in education acts as a catalyst to increase students' motivation to complete learning tasks and achieve more educational goals. Recently, greater attention is drawn to adopting gamification and gaming elements in the learning environment. Gamification is commonly defined as "using game design elements in non-game contexts" (Deterding *et al.*, 2011). According to Barab *et al.* (2005), principles such as play, inquisitiveness, challenge, and control are always embedded in educational games, which enables players to perceive their participation as more meaningful and engaging. Moreover, using games in educational contexts benefits students in various ways: increasing engagement in the learning process, stimulating positive behaviors, and facilitating the acquisition of knowledge and skills (Sobocinski, 2018).

According to Vukovac *et al.* (2018), only a few primary and secondary teachers are familiar with the concept of gamification, while their use of such applications is still limited. In Saudi Arabia, Alabbasi (2018) conducted a survey to determine teachers' perspectives of using gamification techniques and found that, although a reasonable number held a positive view, some felt negatively about the effects of certain gaming elements on learners. Furthermore, Alfulaih (2018) discovered that a considerable number of English as a foreign language (EFL) teachers struggled

with their learners' lack of interest and motivation; it is therefore recommended that more Saudi EFL classes adopt gamification to engage students more in active learning.

Currently, several applications for educational purposes are available and readily accessible, such as Youtopia, Duolingo, and ClassDojo; however, this does not mean that the majority of Saudi EFL teachers are actually making use of and incorporating them into teaching practice. Whether these applications are adopted depends partly on their behavioral intentions, which are also influenced by a combination of external and internal factors. Studies of users' behavioral intentions toward new technology have revealed that adoption is generally associated with factors such as user attitudes and perceived usefulness and social influences (Davis, 1985; Davis *et al.*, 1989; Burton-Jones and Hubona, 2006; Hamari and Koivisto, 2013; Chen, 2018). Further investigation is necessary, however, in order to analyze the factors specifically influencing Saudi female EFL teachers in terms of their behavioral intentions to adopt gamification, and this study intends to fill that gap in the existing body of research.

2. LITERATURE REVIEW

2.1. Gamification in the Educational Context

According to Deterding *et al.* (2011), gamification has been used as a technical term since 2010 and defined as applying the characteristics of gaming elements—associated with playing a specific role in gameplay—to non-game contexts. Lee and Hammer (2011) offered a definition closest to the educational context: employing game mechanics, dynamics, and frameworks to encourage the desired behavior from individuals. The main goal of using gamification with learners is to encourage positive behavior and greater engagement, create more enjoyable experiences, and generate a competitive atmosphere (Kim and Lee, 2015).

In addition, gamification provides the opportunity for learners to engage and collaborate with their classmates while executing their assigned task. The technique includes point-scoring, levels, leader boards, badges, challenges, as well as time restrictions, which encourage students to achieve their educational goals (Pho and Dinscore, 2015); as such, students are rewarded for positive behavior and motivated to achieve further learning objectives. Of course, reward procedures were applied to school activities before online games became popular: students successfully completing their assignments were awarded points and certificates at the end of their course. The difference lies in the wider possibilities offered by the new technology. In this respect, Sobocinski (2018) argues that education is already gamified in terms of the individual grades, certificates and diplomas, and grade point averages (GPAs) used to stratify students, functions also offered by gamification through the aforementioned techniques to reward and rank players.

Gamification plays a key role in the cognitive, emotional, and social areas. According to Lee and Hammer (2011) the gamified design provides a complex system of rules and cognitive content that guides players through the mastery learning procedures and retains their involvement with gradual levels of difficulty, rewarding each student with a point or star for every level successfully achieved. Emotionally, feedback is offered by gamified systems when a player fails to gain the required points and has to repeat a particular function without fear of failure. Finally, in social terms, gamification allows players to adopt new identities (as scholars or experts) and reward each other with virtual currency or points. Also, students can monitor each other's performance on a leader board.

Several studies have provided empirical evidence on the effectiveness of gamification in education, such as Frost *et al.* (2015), who examined the effects on students' interest and motivation of gaming elements included in a learning management system (LMS). Their findings revealed that gamification can encourage student interest and meet relatedness needs; moreover, it has a positive impact on their motivation and offers individualized and meaningful feedback on errors. However, the competitive elements seem to be less appealing to girls than boys (Kickmeier-Rust *et al.*, 2014). Sun and Hsieh (2018) recommend that English language classes should incorporate gaming elements, though, because learners tend to be more interested in and competitive during their lessons, as

well as tools to ensure they pay more attention in the classroom. Su and Cheng (2015) mentioned that gamified lessons enhance not only learners' motivation but also their achievements.

2.2. Technology Acceptance Model (TAM)

The most widely used model in using new technology for educational purposes is the Technology Acceptance Model (TAM) developed by Davis (1985), which takes its theoretical roots from the Theory of Reasoned Action (TRA) proposed by Fishbein and Ajzen (1975). According to Davis *et al.* (1989), the TRA posited that the performance of individuals is determined by their behavioral intentions (BI), which is dependent on their attitude (A) about that behavior and subjective norms (SN). Prediction by this particular model was further estimated by regression: BI = A + SN.

Accordingly, behavioral intention (BI) measures a person's intention whether or not to carry through a specified behavior (Fishbein and Ajzen, 1975). Davis *et al.* (1989) stated that BI determined the adoption of technology, while BI is determined in turn by a person's attitude toward using it (A) and its perceived usefulness (U), or BI = A + U; their attitude is considered an essential determinant in their acceptance of the technology (King and He, 2006). Similarly, a user's perception of usefulness (U) in this model plays a key role in determining their intention to use a system (Burton-Jones and Hubona, 2006).

2.3. Attitude toward Gamification

The success of any initiative to implement technology in a learning environment depends greatly on the attitudes of potential users (Zain *et al.*, 2005). According to Bohner and Dickel (2011), attitude is understood as the evaluation of the thinking that influences a person's opinion of people, ideas, or objects, measured on self-report scales comprising three components: affectivity, cognition, and behavior (Albirini, 2006).

In addition, Hamari and Koivisto (2013) stated that a user's attitude was a strong prediction for adopting and continuing to use gamification, while Yüksel and Durmaz (2016) found a strong correlation between a user's attitude toward gamification and intention to buy the product. Kao and Tsai (2009) also agreed that teachers' intentions to use technology is significantly influenced by their positive or negative attitudes toward it. Similarly, Teo *et al.* (2019) stated that users' attitudes played a key role in determining their positive behavioral intentions to use technology. In the Middle East, there is evidence that teachers' attitudes determine their behavioral intentions. According to Al-Khaldi and Al-Jabri (1998), affective more than cognitive attitude is related to the use of technology. Generally, users' positive attitudes influence their intentions to adopt and use technology (Abdel-Maksoud, 2018); hence, if teachers have a positive attitude toward gamification, they will be more motivated to use it. Therefore, the following hypothesis is posited:

H1: *Teachers' attitudes toward gamification will influence their behavioral intentions to use it in their teaching.*

2.4. Perceived Usefulness

Perceived usefulness (PU) is defined as "the degree to which a person believes that using a particular system would enhance his or her job performance" (Davis, 1985). In other words, a user who believes technology (e.g., gamified applications) will improve the quality of work outcomes, increase the effectiveness of personal interaction, enable more control over the process, and save time, will be more likely to use the system (Gallego *et al.*, 2008). Moreover, a strong and direct relationship was found between perceived usefulness and intention to use gamification (Sánchez-Mena *et al.*, 2016). In addition, Yoo *et al.* (2017) stated that the PU of gamified smart tourism applications (GSTA) can predict people's intentions to use it. In the Middle East, student satisfaction with the Acadox platform is influenced by their perception of its usefulness (Abdel-Maksoud, 2018). Likewise in Hong Kong, Wong (2016) found that primary school teachers' PU of technology can slightly predict their behavioral intention

to use it. As PU seems an important factor in determining users' behavioral intentions across different cultures, including Saudi Arabia, the following hypothesis is posited:

***H2**: Teachers who perceive that gamified applications are useful will intend to use them in their teaching.*

2.5. Perceived Social Influence

According to AlMarshedi *et al.* (2017), the use of gamification is influenced by social rather than technological factors, in that social behavior can affect a user's opinion toward and adoption of it, and their performance, especially in a collectivist culture. On the other hand, particularly in highly individualist cultures, personal preferences can affect behavior toward a subject more significantly than social influences (Aaker and Maheswaran, 1997). Fishbein and Ajzen (1975) referred to social influence as a social pressure by stipulating that a person based their behavior according to people who were important to them, who thought they should or should not accomplish a task. Indeed, social influence has been identified as a key factor in affecting attitudes toward using technology (Gallego *et al.*, 2008; Hamari and Koivisto, 2013; Yüksel and Durmaz, 2016); moreover, social influence can exert a direct influence on behavioral intention to use technology (Venkatesh and Davis, 2000; Wang and Wang, 2010). According to Hao (2017), the combination of social influences, particularly social image and subjective norms, seem to act as determinants for users adopting technology, and several other studies into various cultural and social influences have identified the latter as an essential factor for using technology, including in the Middle East. Hence, the following hypothesis is posited:

***H3**: Perceived social influence will influence teachers' behavioral intentions to use gamification in their teaching.*

3. THE STUDY

The purpose of this study is to: (1) examine the relationship between teachers' behavioral intentions to adopt gamification and the independent variables selected, and (2) determine how those variables can predict their intention to use gamified applications.

3.1. Methodology

This is a quantitative study and a descriptive, correlational research design was adopted. The target population for this study comprised 1,968 female English teachers employed at public schools in Riyadh, Saudi Arabia. The minimum required sample size was determined by Cohen's table, ensuring that all the significance tests were performed at $\alpha = 0.05$ for the multiple regression analysis. To perform the F-test of the multiple R^2, expecting a medium effect size and three candidate predictors, the required sample size is 76, while G*Power software suggests a minimum sample size of 119 for regression (ES = 0.15, α=0.05, power = 0.95, 3 predictors).

3.2. Sample and Data Collection

With the assistance of the Head of English Language at the Ministry of Education, the sample of 300 female English teachers was randomly selected from the target population. A questionnaire was distributed to these in the second semester of 2018, from which 212 responses were received after 14 days. However, 55 of the responses were incomplete and removed, leaving 157 valid responses for the analysis. The response rate was 52%.

3.3. Research Instrument

Validated items were adapted from previous research studies for the questionnaire used in this study (Gardner and Amoroso, 2004; Albirini, 2006; Gallego *et al.*, 2008). These studies used TAM as a theoretical background, achieved a reasonable validity and reliability coefficient, and aligned with the objectives of this study. The questionnaire was divided into four parts: (1) "Behavioral Intention to Use (BI)," consisting of three items, was taken from Gardner and Amoroso (2004); (2) "Attitude (A)," taken from Albirini (2006), consisted of two subscales

of "Affectivity (AA)" (four items) and "Cognition (AC)" (three items); while both (3) "Perceived Usefulness (PU)," comprising four items, and (4) "Perceived Social Influence (SI)," comprising three items, were taken from Gallego *et al.* (2008). All items were assessed using a 5-point Likert scale (ranging from 1 = strongly disagree to 5 = strongly agree). Its validity was evaluated by a panel of four experts, who commented primarily on the content: the study notification letter, the clarity and appropriateness of the items and response options, and the survey length; the questionnaire was slightly modified in accordance with their feedback. In addition, a principal axis factor analysis (PA) with varimax rotation was conducted to assess the underlying structure of the questionnaire items. According to Leech *et al.* (2008), PA analysis helps determine which items within a large data set can be grouped together. Table 1 displays the results.

Table-1. Rotated Factor Loadings.

Items	Factors Loading				Com.
	1	2	3	4	
I always try to use the gamified application in/on as many cases/occasions as possible. (BI1)	0.78				0.80
If I had enough time, I would use the gamified application. (BI2)	0.67				0.79
I intend to continue using the gamified application in the future. (BI3)	0.33				0.30
I like using gamification in teaching. (AA1)	0.88				0.84
I hate to talk with my colleagues about gamification.* (AA2)			0.66		0.50
Using gamified applications is enjoyable. (AA3)	0.90				0.86
Using gamified applications makes me feel uncomfortable.* (AA4)			0.85		0.70
I do not think I would ever need gamified learning in my classroom.* (AC1)			0.71		0.61
Gamified applications can enhance my students' learning progress. (AC2)	0.81				0.76
The gamified applications make learning less engaging.* (AC3)			0.88		0.76
Using gamification gives me greater control over my work. (PU1)		0.85			0.72
Use of gamification can reduce the time needed for my work tasks. (PU2)		0.80			0.82
Using gamification improves the quality of my work. (PU3)		0.73			0.80
Overall, gamification is useful for my work. (PU4)		0.87			0.82
People who influence my behavior think that I should use gamification. (SI1)				0.75	0.58
People whom I respect would encourage me to use gamification. (SI2)				0.68	0.55
My friends/co-workers would think using gamification is a good idea. (SI3)				0.64	0.47
Eigenvalues	3.85	3.10	2.75	1.77	
% of variance	22.63	18.04	16.15	10.40	

Com. = Communality, BI = Behavioral Intention, AA = Attitude (Affectivity), AC = Attitude (Cognition), PU = Perceived Usefulness, SI = Perceived Social Influence. *reversed item.

It can be seen from Table 1 that the first factor is the "Behavioral Intention to Use" variable, having credible loadings on the first three items in addition to strong loadings on items AA1, AA3, and AC2, which should therefore be loaded under the "Attitude" variable. These three items will be excluded from the questionnaire and subsequent analysis. In order, the factors seem to be: second, the "Perceived Usefulness" variable, with high loadings, ranging from 0.73 to 0.87, on the four items; third, "Attitude," where the four items are highly loaded on items AA2, AA4, AC1, and AC3; and fourth, "Perceived Social Influence," highly loaded on the last three items of S1–S3.

The reliability of the questionnaire was assessed using Cronbach's alpha reliability coefficient and resulted in a 0.71 alpha coefficient for "Behavioral Intention to Use" (three items), 0.87 for "Attitude" (four items), 0.92 for "Perceived Usefulness" (four items), and 0.78 for "Perceived Social Influence" (three items).

4. RESULTS

4.1. Correlation

In order to fulfill the objective of this study, a correlation analysis was conducted to explore the relationship between teachers' behavioral intentions to use gamification in their classrooms and their attitudes toward gamification, its perceived usefulness, and their perceived social influences. Table 2 shows the results.

Table-2. Correlation of Teachers' "Behavioral Intention to Use," "Attitude," "Perceived Usefulness," and "Perceived Social Influence."

Scale	Attitude		Perceived Usefulness	Perceived Social Influence
	Affectivity	Cognition		
Behavioral Intention to Use	0.45** (0.0001)	0.44** (0.0001)	0.58** (0.0001)	0.43** (0.0001)

** $p < 0.001$.

Table 2 summarizes the correlation between the teachers' response scores on general behavioral intention to use and affective and cognitive attitudes, perceived usefulness, and perceived social influence. The affective and cognitive attitudes are related to the teachers' behavioral intention to use by a correlation coefficient of 0.45, and 0.44, at $\alpha = 0.001$, respectively, which, based on Cohen's interpretation (Cohen, 1988), are considered to be at a medium relation level. Moreover, each of the two remaining variables perceived usefulness and perceived social influence) show significant correlation, implying that those teachers with positive perceptions of usefulness and social influences tend to use gamification for classroom activities. The strength of these relationships to behavioral intention to use are at a high level for perceived usefulness and medium level for perceived social influence.

4.2. Regression Analysis

Multiple regression analysis was performed to determine which combination of attitude, perceived usefulness, and perceived social influence is the most effective for predicting teachers' behavioral intentions to use gamification. Table 3 summarizes the resulting intercorrelations among the variables.

Table-3. Standard Deviations and Intercorrelations for Behavioral Intention to Use Gamification and Predictor Variables.

Variables	M	SD	1	2	3	Tolerance
Behavioral Intention to Use	3.16	0.81	0.50**	0.58**	0.43**	
Predictors:						
1. Attitude	3.78	0.92	-	0.24**	0.22**	0.92
2. Perceived Usefulness	3.66	1.07		-	0.28**	0.89
3. Perceived Social Influence	3.84	0.84			-	0.90

** $p < 0.001$. M = mean, SD = standard deviation.

The correlation matrix in Table 3 shows that all the independent variables are significantly related, as well as listing all the means (M) and standard deviations (SD) of all variables. In addition, the assumption of multicollinearity was checked. According to Leech *et al.* (2008), if tolerance values are higher than the result of $1 - R^2$ for every predictor, then multicollinearity is not a problem; this was the case in this study, where $1 - R^2$ was 0.49 and the tolerance values were all higher.

Furthermore, Table 4 shows that this combination of variables significantly predicts behavioral intention to use gamification ($F_{(3,153)} = 52.55$, $p < 0.001$): all three variables contribute significantly to the prediction. As $R^2 = 0.51$, 51% of the variance in teachers' behavioral intentions to use gamification is explained by the model, which, according to Cohen (1988), constitutes a large effect.

Table-4. Multiple Regression Analysis for Predictor Variables.

Variables	B	SEB	β	t	p
Attitude	0.30	0.05	0.33**	5.55	0.0001
Perceived Usefulness	0.33	0.04	0.43**	7.20	0.0001
Perceived Social Influence	0.23	0.06	0.23**	3.91	0.0001
Constant	0.07	0.27			

$R = 0.71$, $R^2 = 0.51$, $F_{(3,153)} = 52.55$, $p < 0.001$. ** $p < 0.01$. B = unstandardized beta, SEB = standard error for B, β = standardized beta, t = t-test value, p = probability value.

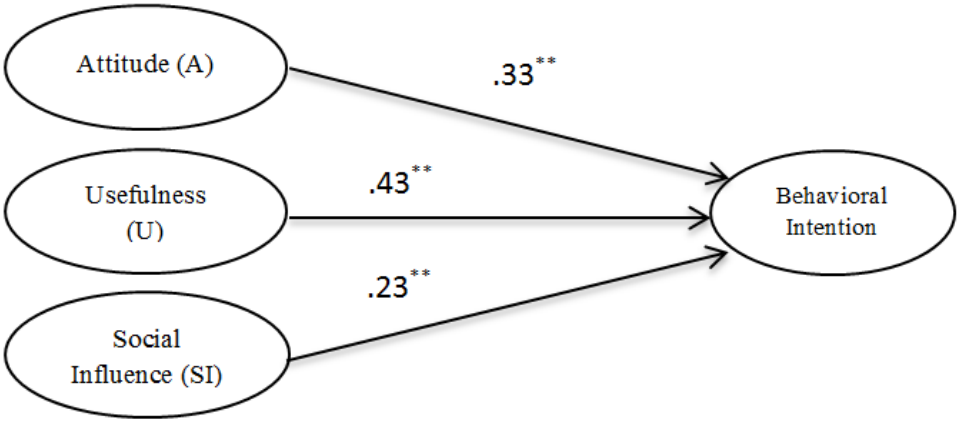

Figure-1. Predictors of teachers' behavioral intentions to use gamification.

As can be seen from Figure 1, the largest beta weight for perceived usefulness (0.43, $p < 0.01$) indicates that positive perceptions of usefulness among female teachers contributes most to predicting behavioral intentions to use gamification, followed by positive attitudes and perceived social influences toward its use.

The regression equation ($\hat{y} = 0.07 + 0.33$ (PU) + 0.30 (A) + 0.23 (SI) + e) revealed that for every unit increase in teachers' perceived usefulness, attitudes, and perceived social influences, their behavioral intentions to use gamification increased by 0.33, 0.30, and 0.23 units, respectively.

5. DISCUSSION

Examining the relationship between the variables in this study, a positive relationship was found to exist between behavioral intention to use gamification and affective and cognitive attitudes, perceived usefulness, and perceived social influences, which suggests that a more positive affective, cognitive attitude and perception of usefulness and social influences can lead to a higher behavioral intention to use gamification. The positive attitude displayed by female Saudi teachers can be explained by the affective and cognitive domains. The strength of these relationships are virtually equal, meaning that the teachers decide to use gamified applications based on not only their personal preference and technophilia but also their awareness of its benefits. According to Al-Khaldi and Al-Jabri (1998), attitudes toward the technology that rapidly modernizes countries such as Saudi Arabia are shaped by affectivity more than cognition. However, this view seems to have changed over time, so that today, widespread acceptance and use of technology in all spheres of life, ready online access to educational content, and increasing levels of participation by Saudi women in public life impact the choices made. While female Saudi professionals have learned to adapt their professional interactions to their technological knowledge, social influences have also played a key role in female Saudi teachers' use of technology. This may be due to Saudi society being a collectivist, not an individualistic, culture, in which a group mentality and social norms control each individual's decision-making; therefore, it is unlikely that the opinions of female teachers are independent of their immediate social environment.

The findings of this study support those of earlier studies, according to which, teachers' intentions to use technology is significantly influenced by their respective positive or negative attitudes (Kao and Tsai, 2009; Hamari and Koivisto, 2013; Yüksel and Durmaz, 2016); moreover, those with positive perceptions are more likely to adopt

technology (Gallego *et al.*, 2008; Sánchez-Mena *et al.*, 2016; Yoo *et al.*, 2017). In addition, teachers are influenced by their social surroundings, and their behavioral intentions will change according to others' expectations: their intention to use technology is higher when they think it is expected of them by those whom they respect (Venkatesh and Davis, 2000; Gallego *et al.*, 2008; Wang and Wang, 2010; Hamari and Koivisto, 2013).

All three hypotheses posited in this study were supported by the results of the multiple regression analysis, which revealed that the independent variables of attitude (A), perceived usefulness (PU), and perceived social influence (SI) significantly predicts behavioral intention to use (BI) gamification. The relative importance of each predictor variable was determined by their beta weights (β), whereby the contribution of all the other variables was controlled. PU and A were of most significance in determining BI, while SI had the lowest predictive power. The contribution of PU to BI confirms the finding of Yoo *et al.* (2017), who also discovered PU to be the best predictor of BI in relation to gamification. Furthermore, the contribution of A is consistent with Hamari and Koivisto (2013), who found that a user's attitude was a significant predictor for adopting and continuing to use gamification. Finally, the contribution of SI agrees with the conclusions of Wang and Wang (2010) and Venkatesh and Davis (2000) it to be a positive predictor of BI.

6. CONCLUSION

The main objective of this study was to determine and empirically examine the factors contributing to teachers' behavioral intentions to use gamified applications in their classrooms, since according to TAM, behavioral intention to use constitutes a significant factor in the actual use of technology. The main findings suggest that all the variables selected (attitude, perceived usefulness, and perceived social influence) are positively correlated with behavioral intention to use gamification, indicating the key role played by these factors in the end user's actions. Thus, it is reasonable that a combination of variables such as these three could predict the future use of gamification by female English teachers in Saudi Arabia.

As a result of this study, there is a theoretical implication for the acceptance of gamification by female teachers. TAM already draws attention to internal variables, such as attitude and perceived usefulness, as important predictors of users' behavioral intentions, and the findings reported here provides further evidence of this relationship. However, TAM overlooks the external variable of perceived social influence, with Davis *et al.* (1989) pointing out that "TAM does not include TRA's subjective norms (SN) as a determinant of BI" (p.5) and suggesting that social influences may have an indirect effect on behavioral intentions. In fact, this study provides empirical evidence of how the expectations of people around us do affect our decisions; thus, it is suggested that TAM should be extended to include external variables, especially social influences.

Essential practical implications for educational institutions and supervisors are also offered by the findings of this study: as teachers' behavioral intentions to use gamification is influenced by the three main factors of attitude, perceived usefulness, and perceived social influence, these should be taken into account by any future programs and initiatives to introduce this technology into education. Thus, teacher training provided by educational institutions should focus on not only how to use the technology but also demonstrations of the content, to improve the teachers' attitudes toward and awareness of the benefits from implementing gamified applications in their classrooms. As perceived social influence also affects teachers' behavioral intentions, educational supervisors who monitor educational processes and teachers' performance should draw attention to and encourage the use of gamification. Similarly, creating a network for those interested in gamification could be invaluable for enabling teachers to share their experiences and exchange views on professional practice.

With respect to limitations, this study focuses on behavioral intentions to use gamified applications among female English teachers in Saudi public schools, and the findings cannot be generalized to include private schools, therefore. Another acknowledged limitation is that the study does not discuss or resolve issues related to Western dominance in this new technology: as public schools in Saudi Arabia are gender-specific, male and female teachers

work in separate schools, and the results reported here are restricted to female teachers only. Furthermore, the sample size required was based on Cohen's table, particularly for three predictor variables, whereas future research may select a substantially larger sample to test. Finally, the study does not address actual use of gamified applications because the gamification concept is still at an early stage in Saudi schools.

Since 51% of the variance (R^2 = 0.51) in behavioral intention to use gamification could be explained by the three independent variables included in the regression analysis, 49% of the unexplained variance highlights that other, such as intrinsic and extrinsic motivations, still require further investigation. Further research should also be undertaken into the factors influencing the behavioral intentions of male teachers to use gamification, as well as comparing the willingness of male and female teachers to use gamified applications in their classrooms. The frequency with which teachers use such applications is another area deserving further examination. Finally, future research should also explore the cultural influences that shape peoples' habits, values, and interpretations in a particular context.

Funding: This study received no specific financial support.
Competing Interests: The author declares that there are no conflicts of interests regarding the publication of this paper.
Contributors/Acknowledgement: The researcher would is indebted to the respondents and the Head of English Language, Mrs. Abeer Al-Shahrani, at the Ministry of Education for their assistance.

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