Article

Using Digital Learning Platforms for Teaching Arabic Literacy: A Post-Pandemic Mobile Learning Scenario in Saudi Arabia

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Abstract: Mobile learning and its influence on improving learning outcomes are among the recent trends in education. This study investigates the factors impacting teachers' intentions to use (and their usage of) the 'I Read Arabic' (IRA) digital platform for teaching literacy. By utilising the unified theory of acceptance and use of technology (UTAUT2) model, seven factors were explored in terms of their predictions of behavioural intention and actual use of the IRA digital platform. A determined sample size of 285 Arabic teachers teaching grades K–6 in Saudi Arabia participated in this study. A mixed-method approach, using a survey questionnaire and semi-structured interviews, was conducted to collect data. Structural equation modelling and thematic analysis were used to analyse the data. The quantitative results indicated that hedonic motivation, habit, effort expectancy, performance expectancy, and price value were significant predictors of teachers' behavioural intention to use the IRA digital platform for teaching literacy. Teachers' usage of the IRA digital platform was shown to be significantly influenced by behavioural intention and facilitating conditions. The qualitative results yielded two main themes: the advantages and challenges of using the IRA digital platform. Several useful implications are suggested for teachers, school leaders, and education policy makers to sustain digital learning in Saudi Arabia's post-pandemic educational system.

Keywords: literacy; post-pandemic; digital platform; mobile learning; teacher acceptance; UTAUT2

1. Introduction

Saudi Arabia's digital transformation is anchored in the country's 2030 Vision of expanding its digital economy by 50% [1,2]. Saudi Arabia's Ministry of Education has always cited technology as an integral component of its transformational agenda concerning education. As a result, integrating digital technologies into teaching and learning processes has become essential and a requisite for all K–12 levels [3]. In the context of teaching the Arabic language, many empirical studies have highlighted the significance of utilising digital technologies because of their positive impact on teaching performance and learning outcomes [4]. Digital technology applications have the potential to improve literacy skills, including listening, speaking, reading, and writing skills, as well as the potential to make learning enjoyable, flexible, participative, and motivating [5–10]. Recently, interest in employing digital mobile technologies for teaching languages has increased considerably, particularly since the COVID-19 pandemic [11–14]. The pandemic highlighted the necessity for teachers to be ready to utilise a range of digital technologies throughout their online-teaching practices [15], which also heightened the importance of using mobile technology and digital platforms [16]. Despite the enormous progress toward the digital transformation of Saudi Arabia, the pandemic presented unprecedented challenges and opportunities. Teachers and students had to quickly adapt to the new learning environment of distance education and use digital platforms (e.g., the Madrasati digital platform) for teaching and learning [17,18]. The use of digital learning platforms during the pandemic had a significant impact on the teaching landscape and overall learning outcomes [19–21]. Digital learning platforms are increasingly gaining popularity in terms of supporting mobile learning in

K–12 educational contexts, specifically with respect to teaching literacy skills through a more attractive learning environment [11,13].

Nevertheless, teachers in Saudi Arabia's K–12 schools encounter a wide range of challenges when integrating digital technology and mobile learning in their teaching practices in general. For example, some teachers have negative perceptions about using technology in the classroom, while others have not been trained or do not have the essential technical knowledge to use digital technology tools [14,22]. Other teachers lack adequate support from school administration to integrate digital technologies [23,24]. Al Lily et al. [18] and Alfallaj [25] also noted problems related to management, technicalities, financial constraints, and cultural factors as the major obstacles to using digital and mobile learning in Saudi K–12 education. In the context of teaching literacy among Arabic language teachers in Saudi Arabia, a recent study by Al-Abdullatif and Aldoghan [4] highlighted that Arabic language teachers lack the digital confidence and competencies necessary to integrate digital technologies into their teaching practices. This issue became more prominent during the COVID-19 pandemic when teachers in Saudi Arabia found themselves forced to utilise digital learning platforms to instruct and assess students at a distance [18]. Now that the pandemic's crisis phase is over and traditional classroom learning is back, do Arabic language teachers intend to use digital learning platform technologies for teaching literacy? The importance of answering this question has been highlighted, especially since the Saudi Ministry of Education's move toward adopting blended learning strategies for the future of K–12 education [19]. Thus, the objective of this study was to answer a key research question: what are the key determinants that influence teachers' acceptance of using the 'I Read Arabic' (IRA) digital platform for teaching literacy? Accordingly, the theoretical model of the unified theory of acceptance and use of technology UTAUT2 [26] was utilised to examine the factors affecting the intentions of Arabic language teachers to integrate the IRA digital platform into their teaching practices. These factors include performance expectancy, effort expectancy, social influence, facilitating conditions, hedonic motivation, price value, habit, behavioural intention, and actual use.

A wide range of factors have triggered the need to teach literacy in multiple formats according to changing societal needs and emerging technologies for teaching and learning [6,27,28]. The IRA digital platform [29], which was launched by Little Thinking Minds in 2015, seeks to enhance Arabic learning outcomes for young learners from preschool to elementary school. It has also been designed to elicit interest in the Arabic language. The content in the IRA digital platform is offered through books, audio, videos, interactive tasks, and gamified learning activities. Students can also receive expert help from the platform if they encounter challenges while using it. The platform boasts over 120,000 students from 18 countries. Further, it has received recognition awards from the Queen Rania Award for Education Entrepreneurship and the Enterprise Forum Arab Startup Competition [29]. The platform supports mobile learning by providing an app that can be downloaded on smart tablets and mobile devices. Students who use the app to learn Arabic enjoy its flexibility and convenience while they enhance their self-motivation, critical thinking, and technical knowledge. They also gain a global perspective of the Arabic language. Hence, teachers in preschool and elementary schools can utilise components of the IRA digital platform to enhance their students' literacy skills. In addition, it is possible to subscribe to this platform and benefit from its contents with one-month, six-month, or annual fees.

It is now critical and timely to determine Arabic language teachers' perceptions of digital learning platforms (e.g., their acceptance and adoption), considering their potential in developing literacy skills. The significance of this study was determined in terms of two aspects. First, the UTAUT2 model is regarded as credible in the context of the user's adoption of mobile learning and digital technology [30]. However, when examining teachers' adoption of mobile learning, the UTAUT2 model is not commonly used [16,31]. Therefore, the present study adds to the literature on the UTAUT2 model regarding digital learning platforms' acceptance among K–12 Arabic teachers. Second, the current literature shows a scarcity of studies on the integration of digital platform technologies in Arabic

language teaching. Thus, we consider the present study unique because it focuses on the factors that predict teachers' acceptance and usage of digital learning platforms in their future teaching practices in Saudi Arabia. This study contributes to the existing literature on mobile learning and digital technology integration in teaching literacy. This study gives insights into a better understanding of these factors and, thus, considers them when creating educational policies and developing professional programs for Arabic language teachers to heighten their digital knowledge and competence. In addition, understanding these factors may further improve the orientation, reinforcement, and encouragement from school officials and leaders to employ more digital platforms in the future, particularly in a post-pandemic world. Hence, it is necessary to explore these issues further to formulate policy recommendations to improve the acceptability of digital and mobile learning among teachers.

2. Theoretical Framework, Literature Review, and Hypotheses' Development

Many theories and models exist in the literature that examine individuals' perceptions toward the acceptance and adoption of new technologies. One of the most important is the UTAUT established by Venkatesh et al. [32]. The main components of the UTAUT framework are performance expectancy, effort expectancy, social influence, and facilitating conditions. The creators of the UTAUT model discussed its significance in understanding the user's degree of technological adoption and advised that this model should be evaluated with/in diverse technology applications, user populations, and cultural settings [33]. Many researchers have employed the UTAUT model to explore the determinants of users' adoption and usage of modern technology [34,35]. In 2012, Venkatesh et al. [26] developed the UTAUT model (i.e., UTAUT2) and added three additional constructs that pertain to an individual's use context: hedonic motivation, price value, and habit. They indicated that UTAUT2's seven constructs explain 47% of an individual's behavioural intention to use technology and recommended using this model when technology usage is in its early stages [30]. The UTAUT2 model is mostly advocated for with respect to assessing mobile learning users' behaviour [16] and teachers' acceptance and approval of digital technology integration. Therefore, this research study has utilised the UTAUT2 model as a theoretical lens to inspect the factors predicting the future acceptance and usage of the IRA digital platform among Arabic teachers in Saudi Arabia. The UTAUT2 model's seven factors have been proven to influence behavioural intention, which in turn affects the actual use of the IRA digital platform. They are the independent variables, whereas the mediating variable is behavioural intention, and the dependent variable is actual use. Figure 1 represents the proposed model for this study based on the UTAUT2 model by Venkatesh et al. [26]. The following section discusses UTAUT2's key constructs, as defined by Venkatesh et al. [26,32], their meaning in our study's context (the acceptance and use of the digital IRA platform), and the related literature review of each construct.
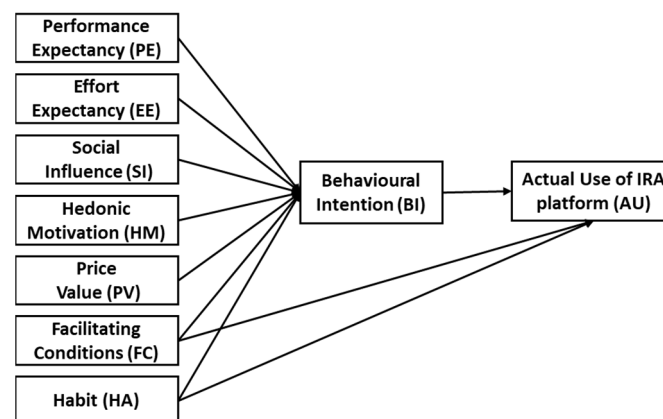

Figure 1. The research's proposed model.

Performance expectancy is defined by Venkatesh et al. [26,32] as individuals' perspectives of technology's usefulness in enhancing work performance. Performance expectancy is often the most significant driver of individuals' intention to use technology, according to Chang [36]. Performance expectancy in the present study is associated with the extent to which Arabic language teachers believe that using the IRA digital platform will help them accomplish their teaching duties and tasks effectively and efficiently. For example, using the IRA digital platform allows teachers to enhance their students' literacy skills and track and assess their learning outcomes. Several studies have indicated that performance expectancy is a key predictor of teachers' behavioural intentions towards digital technology adoption in educational settings [33,37–41]. Therefore, hypothesis one (H1) was suggested: performance expectancy impacts the behavioural intention to use the IRA digital platform.

Effort expectancy denotes the perceived ease of use of technology. Venkatesh et al. [26,32] defined effort expectancy as an individual's confidence in their ability to use technology. Since the utilisation of mobile learning and digital technology in grades K–12 recently began due to unprecedented school closures during the pandemic [19], the use of the IRA digital platform for teaching the Arabic language is new and in its early stages. Therefore, effort expectancy is a critical factor, as teachers' behavioural intentions depend on how user-friendly and easy to operate the applicable technology is for teaching–learning tasks. Birch and Irvine [42] investigated novice teachers' acceptance of using information and communication technologies and indicated that effort expectancy was the key predictor affecting their behavioural intentions. Empirical studies have confirmed that effort expectancy is a significant determinant of teachers' behavioural intentions to accept emerging digital technologies for educational purposes [36,39,40]. Therefore, hypothesis two (H2) was formulated: effort expectancy impacts the behavioural intention to use the IRA digital platform.

Social influence is correlated with individuals who believe that influential people think they should use a particular technology [26,32]. Teachers are likelier to embrace digital technology in their teaching practices if they believe that important stakeholders, such as administrators and peers, approve of its usage [33,41]. In this study, teachers were more inclined to utilise the IRA digital platform to enhance their students' literacy skills if they felt that important people—such as peer teachers, school leadership, and their students' parents—acknowledged their utilisation. Several studies in the literature have supported the idea that social influence is an important determinant of an individual's behavioural intention [43–45]. Therefore, hypothesis three (H3) was proposed: social influence impacts the behavioural intention to use the IRA digital platform.

Facilitating conditions are associated with individuals' perceptions about the availability of the necessary resources and support for using technology [26,32]. Examples of supporting facilities include the availability of resources and the provision of access, technical support, and training to enhance the knowledge and skills of users [40]. In mobile learning, according to Nikolopoulou et al. [33], a poor internet connection, inadequate mobile technology infrastructure, and a lack of administrative support may discourage teachers from using mobile technology in the classroom. Facilitating conditions also assess individuals' confidence in the knowledge and skills required for using a particular technology [46,47]. In the current study, this refers to how teachers perceive the availability of adequate technical infrastructure and institutional support in order to use the IRA digital platform. It also refers to teachers being confident that they have sufficient knowledge to use such technological infrastructure. Facilitating conditions are emphasised in many studies as a crucial factor that influences both the teachers' behavioural intentions [38,40,45] and actual use of digital technologies [38,39,48]. Thus, hypothesis three (H3) and four (H4) were proposed: facilitating conditions impact the behavioural intention to use the IRA digital platform (H3), and facilitating conditions impact the actual use of the IRA digital platform (H4).

Research studies have shown that individuals are likelier to adopt technologies that provide them with pleasure and enjoyment [40]. The excitement or satisfaction received

from using technology is referred to as hedonic motivation [26,32]. In this study, hedonic motivation reflects teachers' perceived pleasure as a result of using the IRA digital platform. Hedonic motivation has been highlighted for its positive impact on individuals' adoption of technology [46]. Nikolopoulou et al. [33] revealed that hedonic motivation had a substantial impact on primary teachers' approval of the adoption of mobile learning. Omar et al. [37] confirmed that hedonic motivation significantly affects teachers' behavioural intentions to adopt mobile technology. Several studies in the literature have confirmed a significant correlation between hedonic motivation and teachers' behavioural intentions with respect to mobile learning and digital technology usage [40,41,48,49]. Accordingly, the suggested hypothesis six (H6) is as follows: hedonic motivation impacts the behavioural intention to use the IRA digital platform.

Price value, according to Venkatesh et al., entails an individual's 'cognitive trade-off between the perceived benefits of the applications and the monetary' [26] (p. 161). Price value may have a substantial influence on customers' adoption of technology [36]. The higher an individual's perceived usefulness of employing a particular technological device compared to its monetary value, the higher the intention to use it [16]. In this study, price value measures teachers' perspectives of the expected benefits of using the IRA digital platform compared to its monetary value. In the mobile learning context, teachers might be responsible for the costs associated with the IRA digital platform's usage (e.g., purchasing smart devices, licenses, and internet access). It is evident from the literature that the way in which individuals perceive the price value of technology is significantly associated with their behavioural intention to use it [38,49–51]. Therefore, hypothesis seven (H7) was formulated: price value impacts the behavioural intention to use the IRA digital platform.

Venkatesh et al. [26] stated that habit is the degree to which individuals perceive that their technology-related behaviours have become automatic. Since using the IRA digital platform is recent, and as teachers have varied between 'always' and 'never' in describing the level of their platform use, habit in this study measures teachers' beliefs that utilising the IRA digital platform will be automatic. Habit is related to the outcomes of both prior and future experiences with the IRA digital platform (e.g., assigning reading assignments, evaluating students' learning progress, grading, and reporting learning achievements). Habit has been determined by many research studies to be an important factor in predicting individuals' behavioural intentions and actual use [50]. For example, Moorthy et al. [46] found that habit had the strongest impact on the behavioural intention of using mobile technologies. Furthermore, Avcı [41], Kim and Lee [39], and Zhou et al. [48] investigated the predicting factors of teachers' adoption of digital technologies and found that habit positively affected both teachers' behavioural intentions and their actual use of digital technologies. Thus, hypothesis eight (H8) and hypothesis nine (H9) were formulated: habit impacts the behavioural intention to use the IRA digital platform (H8), and habit impacts the actual use of the IRA digital platform (H9).

Behavioural intention has been identified by many theories on technology acceptance [46] as a fundamental factor underlying the behavioural use of technology. It refers to the extent to which people intend to use (or continue to use) technology [26,32]. Ain et al. [52] defined behavioural intention as an individual's readiness to perform tasks using a particular technology. Here, behavioural intention measures teachers' readiness to utilise, or continue to utilise, the IRA digital platform in their teaching practices. Use behaviour refers to teachers' actual use of the IRA digital platform in their instruction to enhance their students' literacy skills. Existing studies on mobile learning and digital technology use [33,38,40,41,48] have proved behavioural intention to be a major predictor of teachers' actual use of digital technologies. Accordingly, the final hypothesis ten (H10) was proposed: behavioural intentions impact the actual use of the IRA digital platform.

3. Method

3.1. Sample and Setting

The quantitative and qualitative data were collected in 2022 when the Ministry of Education announced the full re-opening of K–12 schools in Saudi Arabia after the COVID-19 pandemic. The study's participants were 285 in-service Arabic language teachers in elementary schools (K–6) in the Eastern Province. Their characteristics are presented in Table 1. Most participants were female (73.3%) and between 35–44 years old (38.3%). Almost 34% had 11–20 years of teaching experience, and most taught in public schools (68.1%). Regarding their usage of the IRA digital platform, 36.1% (n = 103) of the respondents indicated that they had never used the IRA digital platform before; the others responded that they had had some experience with it.

Table 1. Sample profile (n = 285).

Characteristics	n	%
Gender		
Male	76	26.7
Female	209	73.3
Age		
<25	43	15.1
25–34	63	22.1
35–44	110	38.6
45–54	54	18.9
>55	15	5.30
Years of teaching experience		
<5	55	19.3
5–10	73	25.6
11–20	96	33.7
21–30	50	17.5
31–40	11	3.90
Type of school		
Public	194	68.1
Private	91	31.9
Level of using the IRA digital platform		
Always	70	24.6
Occasionally	64	22.5
Rarely	48	16.8
Never	103	36.1

Fifteen teachers, nine females and six males, agreed to participate in semi-structured interviews. The respondents ranged in age from 25–55 and had various levels of experience using digital learning platforms (n = 9 never used, n = 1 always used, n = 3 occasionally used, and n = 2 rarely used). Eight participants taught in public schools, and the rest taught in private schools.

3.2. Measurement

This study used two research methods to achieve its purpose: questionnaires were employed to collect quantitative data and semi-structured interviews were conducted to collect qualitative data. First, pre-existing UTAUT2 survey questionnaire items were used to measure participants' perceptions of the nine constructs proposed in the research model (shown in Figure 1). To confirm content validity, the wording of the questionnaire items was slightly modified for the context of this study and revised by three professors who are educational technology experts. The survey comprised two sections. The first section collected the participants' demographic information, and the second section measured the participants' perceptions of the nine constructs of the study's proposed model. A total of 31 items were scored on a 5-point Likert scale ranging from (1) to (5), with (1) indicating

that the respondent strongly disagrees and (5) meaning they strongly agree. Table 2 shows the source and number of items for each construct.

Table 2. Constructs in Research Measurement.

Constructs	Sources
Performance Expectancy (PE) PE1: I find the IRA digital platform useful for performing my teaching duties. PE2: Using the IRA digital platform helps me accomplish my teaching tasks quickly. PE3: Using the IRA digital platform increases my productivity.	[26,32,33,38,53,54]
Effort Expectancy (EE) EE1: Learning how to use the IRA digital platform is easy for me. EE2: My interaction with the IRA digital platform is clear and simple. EE3: It is easy for me to become skillful in using the IRA digital platform in a short time.	[26,32,33,38,53,54]
Social Influence (SI) SI1: Peer teachers who influence my performance think I should use the IRA digital platform. SI2: School management has been helpful in promoting the use of the IRA digital platform. SI3: School leadership has supported using the IRA digital platform for my teaching.	[26,32,33,38,53,54]
Facilitating Conditions (FC) FC1: I have the resources I need to use the IRA digital platform for my teaching. FC2: I have the knowledge necessary to use the IRA digital platform for my teaching. FC3: The IRA digital platform is compatible with other digital tools I use in my teaching. FC4: I can get help from others when I face difficulties using the IRA digital platform.	[26,32,33,38,53,54]
Hedonic Motivation (HM) HM1: Using the IRA digital platform for my teaching is fun. HM2: Using the IRA digital platform for my teaching is enjoyable. HM3: I derive a lot of pleasure from using the IRA digital platform for my teaching.	[26,33,38]
Perceived Value (PV) PV1: I find the IRA digital platform to meet my needs despite the monetary costs of the system. PV2: I am not worried about the monetary costs of the IRA digital platform as long as it meets my teaching needs. PV3: I believe the IRA digital platform will improve my teaching performance despite its high monetary costs.	[26,33,38]
Habit (HA) HA1: Using the IRA digital platform has become a habit for me. HA2: I feel I am addicted to using the IRA digital platform for my teaching. HA3: I feel I must use the IRA digital platform for all my teaching practices. HA4: Using the IRA digital platform for teaching purposes is something that I do without hesitation.	[26,33,38]
Behavioural Intention (BI) BI1: I will use the IRA digital platform if I have the chance to do so. BI2: I intend to continue using the IRA digital platform in the future for educational purposes. BI3: I plan to continue using the IRA digital platform frequently for educational purposes. BI4: I always try to use the IRA digital platform in my education.	[26,32,33,38,53,54]
Actual Use (AU) AU1: Using the IRA digital platform fits my teaching style well. AU2: Using the IRA digital platform fits well with the way I want to teach. AU3: Using the IRA digital platform is compatible with my current teaching situation.	[26,32,33,38,53,54]

The semi-structured interviews consisted of four questions regarding the teachers' experiences with the IRA digital platform, their purpose for using it, their intention to use it or to continue to use it, and factors affecting or influencing their use of the IRA digital platform. The UTAUT2 factors were utilised to guide the interview participants' responses.

3.3. Data Collection

All data were collected in June and July during the 2022 academic year from in-service Arabic language teachers in Saudi Arabia. Ethical clearance and informed consent were obtained from the Research Ethics Committee (REC) at King Faisal University (Reference Number: KFU-REC-2022-JUN-ETHICS107). The quantitative and qualitative data were collected separately. In relation to the quantitative data collection, potential participants were sent a link to the survey questionnaire via email or social media accounts. Participants were also given informed consent forms that ensured the privacy and confidentiality of their responses. The participants had three weeks to voluntarily complete and submit the online questionnaire. In addition to using a quantitative approach, we used a qualitative approach to obtain in-depth information to help understand a given phenomenon [55]. In this study, the most important factors predicting the intentional use and use behaviour of the IRA digital platform among Arabic language teachers involved developing their

students' literacy skills. Semi-instructed interviews were used to collect qualitative data by inviting respondents of the online survey to participate in the interviews. Respondents who agreed were interviewed via video conferencing using the Zoom application.

3.4. Data Analysis

A sufficient sample size, according to Abdel Hamid [56], was calculated by multiplying the number of model constructions by 30. Since the proposed model's construct count was 9, at least 270 individuals were needed for the study. Thus, a sample size of 285 was adequate for conducting the statistical analysis. The collected quantitative data were imported and tabulated using SPSS version 26. Then, partial least squares structural equation modelling (PLS-SEM) was employed to examine the data using the SmartPLS 3.0 software. According to Hair et al. [57], a PLS-SEM analysis involves two main stages. First, to assess the measurement model (outer model), a confirmatory factor analysis (CFA) was performed. This included calculating construct, convergent, and discriminant validity. Second, the structural model (inner model) was measured to examine the proposed relationships among the constructs (hypotheses testing). The results of the PLS-SEM analysis were reported according to the guidelines from Hair et al. [57,58]. Regarding the qualitative data, the collected data were recorded and transcribed using a thematic analysis and coding approach [55,59]. The initial step was to code and categorise the semi-structured interviews' data. The coding was performed independently by the two researchers. The codes were then debated and agreed upon with a level of 98%. The outcome of the coding process resulted in the development of the main themes and sub-themes in this study.

4. Results

4.1. Results of the Quantitative Analysis

4.1.1. Measurement Model Analysis

The measurement model started with assessing the construct validity—the degree to which items measure the idea for which they are intended [57]. This was determined by calculating the indicator loadings for all the items (shown in Table 3). According to Hair et al. [58], loadings $\geq$ 0.7 are recommended. As seen in Table 3, all the items achieved loading values of 0.7 or higher, which is acceptable for a good level of loading for a CFA [57]. The next step was to assess the internal consistency reliability by calculating the composite reliability (CR) and Cronbach's alpha coefficient (α). The CR of all items was between 0.882 and 0.880, and the α values varied between 0.712 and 0.818, indicating a satisfactory to good level of reliability ($\geq$0.7) [58]. After that, the convergent validity of the nine model constructs was examined. This was performed by calculating the average variance extracted (AVE) for all the model constructs. The nine constructs were above the cut-off value of $\geq$0.5 [58], suggesting that each construct accounted for 50% or more of its items' variances.

Table 3. Construct loadings, convergent validity, and reliability analysis.

Construct	Indicator	Standardised Indicator Loadings	α	CR	AVE	R^2	R^2 Adjusted	Q^2
PE	PE1	0.800						
	PE2	0.833	0.771	0.867	0.686			
	PE3	0.851						
EE	EE1	0.776						
	EE2	0.835	0.719	0.842	0.640			
	EE3	0.789						

Table 3. *Cont.*

Construct	Indicator	Standardised Indicator Loadings	α	CR	AVE	R^2	R^2 Adjusted	Q^2
SI	SI1	0.765						
	SI2	0.808	0.791	0.864	0.614			
	SI3	0.798						
	SI4	0.794						
FC	FC1	0.709						
	FC2	0.804	0.733	0.832	0.554			
	FC3	0.709						
	FC4	0.750						
HM	HM1	0.835						
	HM2	0.728	0.712	0.833	0.626			
	HM3	0.806						
PV	PV1	0.783						
	PV2	0.789	0.750	0.858	0.668			
	PV3	0.876						
HA	HA1	0.817						
	HA2	0.825	0.818	0.880	0.646			
	HA3	0.812						
	HA4	0.760						
BI	BI1	0.703						
	BI2	0.784	0.739	0.836	0.561	0.668	0.660	0.361
	BI3	0.761						
	BI4	0.746						
AU	AU1	0.852						
	AU2	0.814	0.743	0.854	0.661	0.564	0.559	0.365
	AU3	0.772						

Finally, the calculation of the discriminant validity was performed. Discriminant validity is defined as the extent to which a variable in the structural model differs empirically from other variables [58]. To achieve discriminant validity, the pairwise correlations of the given constructs should not be higher than the square root of the AVE of all constructs [57]. Moreover, the heterotrait–monotrait (HTMT) ratio was used to test the discriminant validity [60]. HTMT ratios should be <0.85 to achieve discriminant validity. Table 4 shows that the square roots of all the AVE values were greater than the construct correlations and that all the HTMT ratios were lower than 0.85. Therefore, discriminant validity was confirmed for the nine model constructs in this study.

Table 4. Discriminant validity analysis.

Constructs	PE	EE	SI	FC	HM	PV	HA	BI	AU
PE	**0.83**								
EE	0.58 (0.73)	**0.80**							
SI	0.54 (0.69)	0.49 (0.65)	**0.78**						
FC	0.50 (0.64)	0.52 (0.76)	0.55 (0.72)	**0.74**					
HM	0.57 (0.70)	0.58 (0.76)	0.46 (0.56)	0.32 (0.42)	**0.79**				

Table 4. *Cont.*

Constructs	PE	EE	SI	FC	HM	PV	HA	BI	AU
PV	0.56 (0.74)	0.36 (0.51)	0.53 (0.69)	0.53 (0.72)	0.34 (0.44)	**0.82**			
HA	0.55 (0.68)	0.52 (0.70)	0.63 (0.78)	0.59 (0.78)	0.50 (0.63)	0.63 (0.73)	**0.80**		
BI	0.54 (0.60)	0.48 (0.55)	0.46 (0.50)	0.28 (0.31)	0.61 (0.67)	0.40 (0.46)	0.49 (0.57)	**0.75**	
AU	0.47 (0.58)	0.58 (0.77)	0.40 (0.47)	0.46 (0.60)	0.55 (0.66)	0.27 (0.34)	0.61 (0.77)	0.54 (0.59)	**0.81**

Values in bold are the root squares of the AVE; values in parentheses are the HTMT ratios.

4.1.2. Structural Model Analysis

After the measurement model was determined to be satisfactory, the structural model was evaluated by testing the standardised path coefficient size (β), standard error (SE), t-value (t), and corresponding significance levels (*p*-value) [57,58]. Table 5 presents the results of the hypotheses' testing, including all 10 relationships proposed in the structural model. Figures 2 and 3 show the path coefficient and the path coefficient with t-values, respectively. It was found that hedonic motivation (β = 0.355, SE = 0.060, t = 5.866, and *p* < 0.001), habit (β = 0.222, SE = 0.056, t = 3.418, and *p* < 0.01), effort expectancy (β = 0.209, SE = 0.067, t = 3.113, and *p* < 0.01), performance expectancy (β = 0.163, SE = 0.059, t = 2.768, and *p* < 0.01), and price value (β = 0.125, SE = 0.048, t = 2.606, and *p* < 0.01) had a significant and positive influence on teachers' behavioural intentions to use the IRA digital platform. Thus, H1, H2, H6, H7, and H8 were supported. However, social influence (β = −0.075, SE = 0.057, t = 1.326, and *p* > 0.01) and facilitating conditions (β = −0.026, SE = 0.047, t = 0.554, and *p* > 0.01) had no effect on the teachers' behavioural intentions. Thus, H3 and H4 were rejected. Furthermore, the results indicated that behavioural intention (β = 0.564, SE = 0.054, t = 10.362, and *p* < 0.001) and facilitating conditions (β = 0.160, SE = 0.059, t = 2.727, and *p* < 0.01) had a significant influence on the teachers' actual use of the digital platform, while habit (β = 0.127, SE = 0.072, t = 1.752, and *p* > 0.01) had no significant influence on the participants' actual use. Accordingly, H5 and H10 were accepted, and H9 was rejected.

Since this study aimed to anticipate the usage behaviour of digital platforms (e.g., IRA) among teachers with respect to teaching literacy, the R^2 value was used to assess the research model's predictive power [61]. R^2 values of 0.67, 0.33, and 0.19 for the outcome construct were considered great, moderate, and weak, respectively [61]. Accordingly, in this study's model, the values of R^2 for behavioural intention (0.668) and actual use (0.564) are considered to have a substantial and moderate level of predictive ability, respectively. Additionally, the Q^2 value shows the out-of-sample predictive relevance of the independent constructs for the dependent construct under consideration [61]. Q^2 values of 0.02, 0.15, and 0.35 are categorised as small, medium, and large, respectively. Both Q^2 values for behavioural intention (0.361) and actual use (0.365) are considered large, which supports the model's predictive significance [57,58]. Both the R^2 and Q^2 values are shown in Table 3.

Table 5. Hypothesis test results.

H	Independent Variables	Path	Dependent Variables	Path Coefficients (β)	Standard Errors (SE)	t-Values	*p*-Values
H1	PE	->	BI	0.163	0.059	2.768	** 0.006
H2	EE	->	BI	0.209	0.067	3.113	** 0.002
H3	SI	->	BI	−0.075	0.057	1.326	0.185
H4	FC	->	BI	−0.026	0.047	0.554	0.580
H5	FC	->	AU	0.160	0.059	2.727	** 0.007
H6	HM	->	BI	0.355	0.060	5.866	*** 0.000
H7	PV	->	BI	0.125	0.048	2.606	** 0.009
H8	HA	->	BI	0.222	0.065	3.418	** 0.001
H9	HA	->	AU	0.127	0.072	1.752	0.080
H10	BI	->	AU	0.564	0.054	10.362	*** 0.000

Significant at ** *p*-value < 0.01; *** *p*-value < 0.001.
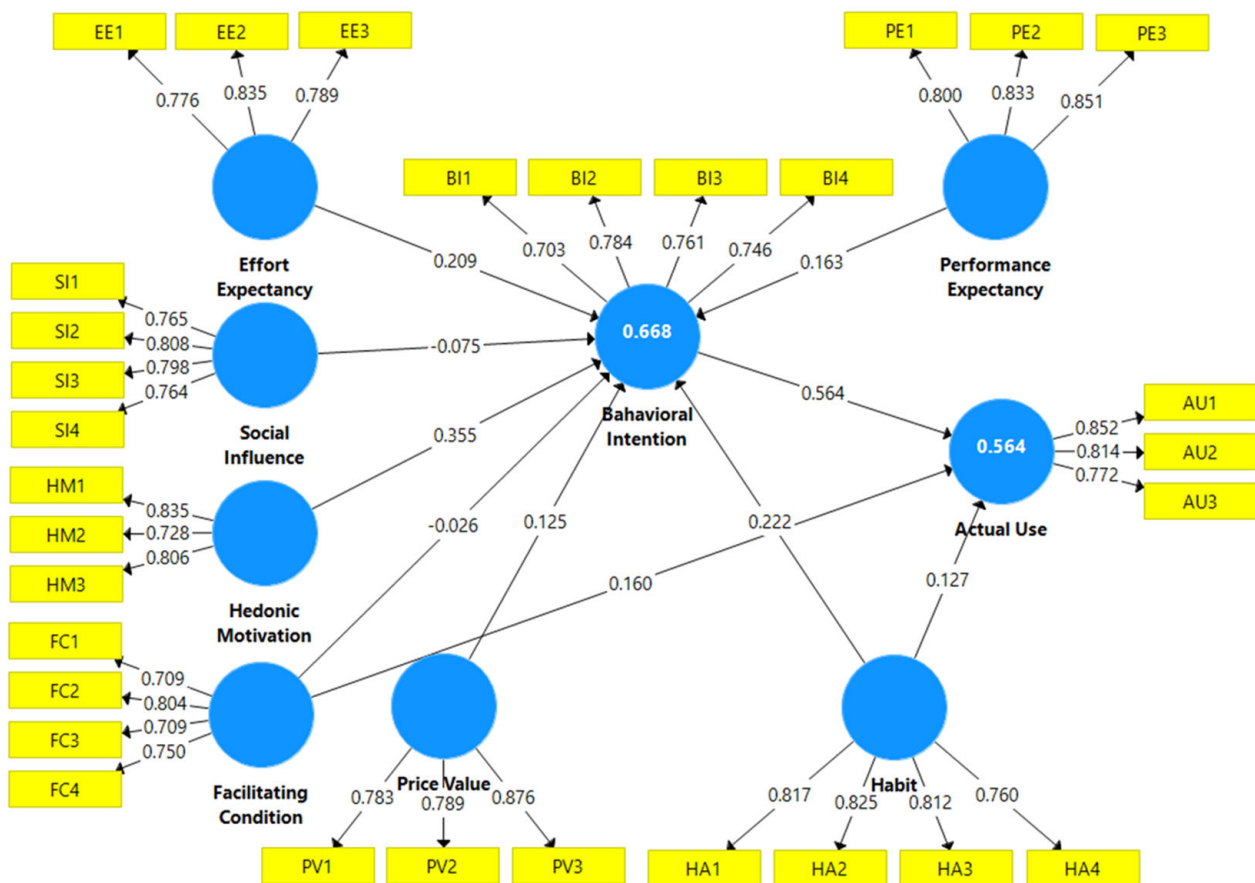
Figure 2. Standardised path coefficient results.
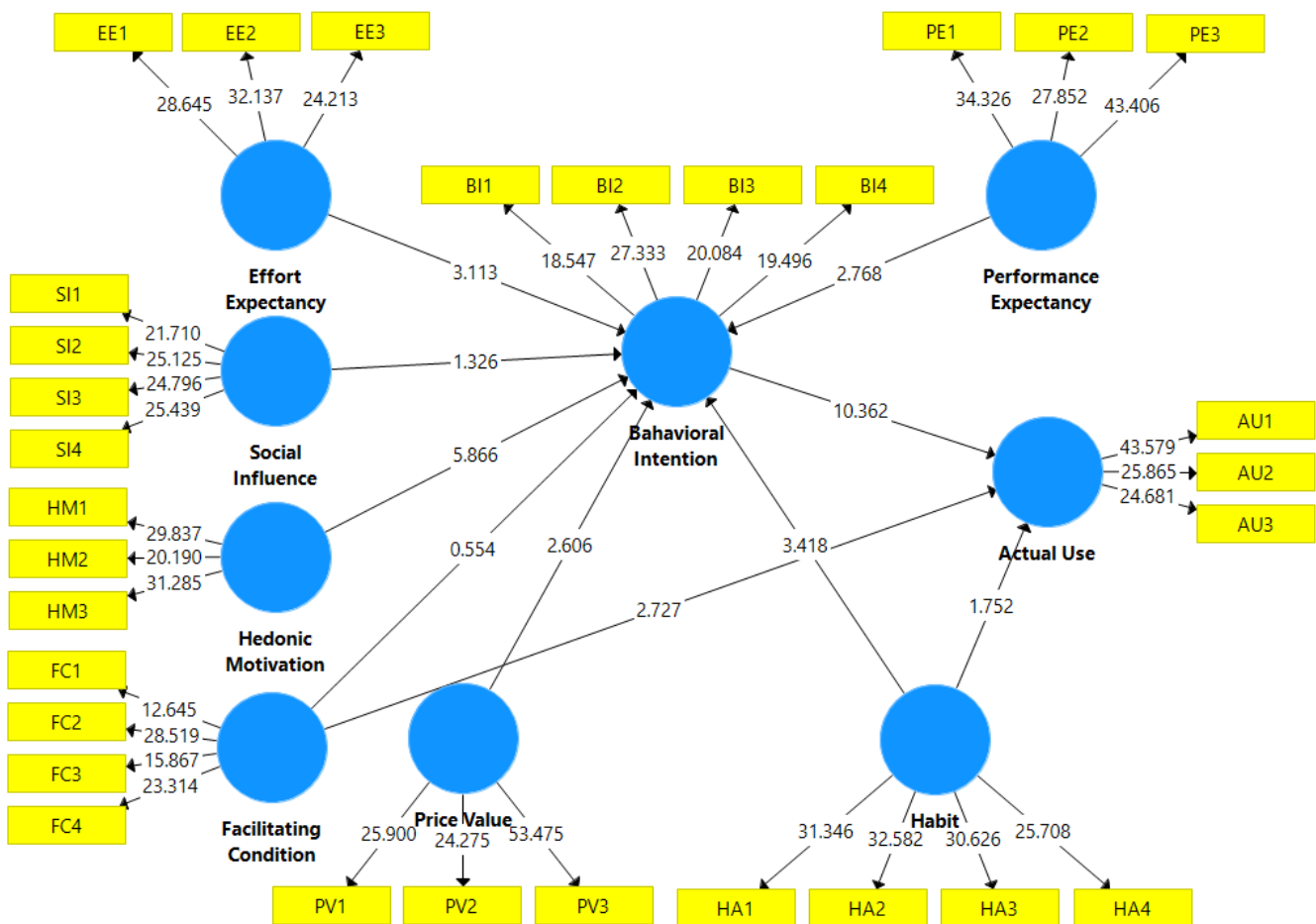
Figure 3. Standardised path coefficient with t-value results.

4.2. Qualitative Analysis Results

The analysis of the interviews yielded two main themes and eight sub-themes underpinned by the UTAUT2 factors (see Table 6). The first main theme described the advantages of using the IRA digital platform among Arabic language teachers, while the second theme revealed the challenges and difficulties of using the IRA digital platform.

Table 6. Data Thematic Analysis.

Theme	Sub-Theme	Frequency of Mention	Sample of Comments
	Hedonic Motivation (HM)	13	'What encouraged me was the beautiful and attractive content of the platform'.
	Habit (HA)	12	'Using this digital platform to enhance literacy skills for elementary school children has become a must, especially after the COVID-19 pandemic'.
Theme 1: Advantages of IRA digital platform use	Effort Expectancy (EE)	10	'It's user friendly and dealing with its contents and features did not require much effort from me'.

Table 6. *Cont.*

Theme	Sub-Theme	Frequency of Mention	Sample of Comments
	Performance Expectancy (PE)	6	'Using the IRA digital platform assisted me in accomplishing my teaching tasks effectively'.
	Price Value (PV)	5	'The cost of the platform did not matter much because the private schools pay the fees.'
	Social Influence (SI)	3	'The school administration certainly expects us, as teachers, to keep pace with digital transformation and employ such platforms in teaching Arabic'.
Theme 2: Challenges of IRA	Facilitating Conditions (FC)	9	'We suffer from a lack of training and professional development in the use of digital platforms'.
	Effort Expectancy (EE)	5	'Using digital platforms for teaching required effort and time'.

4.2.1. Theme 1: Advantages of IRA Digital Platform Use

The interviewed Arabic language teachers provided us with a set of advantages that encouraged and enhanced their behavioural intentions and actual use of the IRA digital platform. This theme comprised six sub-themes/advantages: hedonic motivation, habit, effort expectancy, performance expectancy, price value, and social influence.

Hedonic motivation was one of the most important reasons that supported the participants' intentions to use the IRA digital platform with their students. Most of the interviewed teachers (n = 13) indicated that the features of the platform and its motivating content encouraged them to use it with their students. One interviewee who used the platform in a public school said, 'Because of my experience using the IRA digital platform during the COVID-19 pandemic, I intend to continue using it even after the pandemic when students return to face-to-face education. What encouraged me was the beautiful and attractive content of the platform, such as the digital stories and gamified activities for students'. Another example came from a teacher who used the IRA digital platform with her students in a private school. This person stated that 'Although using the IRA digital platform was mandatory by the school initially, I kind of like it, and honestly, I intend to continue using this platform. I found that it is an interesting literacy platform and in line with the curricula and strategies of teaching in the blended education system that I believe will be applied in Saudi Arabia. Moreover, I found that most of my students enjoyed dealing with this platform, so I will go ahead with it. Thank you to my school's administration for providing me with this chance and experience'.

Habit was another main reason why Arabic language teachers (n = 12) intended to use the IRA digital platform post-pandemic. One teacher explained the reason for this by saying 'Using this digital platform to enhance literacy skills for elementary school children has become a must, especially after the COVID-19 pandemic, since its use was mandatory in the private school in which I teach. Thus, I intend to continue using it in order to achieve the direction and vision of the school administration in using blended education in its system. Really, using this platform has become one of the regular practices in teaching the Arabic language to my young students'. Another teacher said, 'In the near future, I expect teaching literacy via digital platforms, such as the IRA digital platform, will be habitual practice'.

Effort expectancy also encouraged Arabic language teachers to use the IRA digital platform post-pandemic, according to 10 interviewees who stated that they intended to use the IRA digital platform in the future. For example, one said, 'Personally, when I tried this platform, I found it user friendly, and dealing with its contents and features did not require much effort from me. I was able to assign my students learning tasks of reading, comprehension, listening and speaking—easily'. Another teacher pointed out that 'using the IRA digital platform with students is easy. It does not require a specific device to download this platform. Some of my students downloaded the platform on their iPads, and others used their parents' phones. I intend to use the IRA platform in my teaching practices'.

Performance Expectancy was indicated by the participants as one of the advantages that influenced their intention to use the IRA digital platform post-pandemic. Six teachers revealed that using this platform positively enhanced their instructional process. One said that a benefit of the IRA digital platform is improving students' literacy skills: 'The IRA digital platform is useful in assigning literacy learning outcomes, and thus, it contributes to the development of learning performance. For example, the IRA digital platform enables my students to digitally read stories, listen to audio, perform gamified activities on comprehension and retell and record stories phonetically back to the teacher'. In addition, many participants (n = 11) emphasised the benefit of the IRA digital platform in increasing their job performance and productivity. For instance, one participant stated that 'using the IRA digital platform assisted me in accomplishing my teaching tasks effectively, such as following up on students' achievements and progress, completion of required assignments, preparing electronic reports, managing and monitoring students' learning activities and, thus, assessing learning outcomes efficiently'.

Teachers differed in their perceptions of the price value of using the IRA digital platform. Some (n = 5) indicated that the platform was worth the monetary cost of its subscription. A teacher participant who used the IRA digital platform voluntarily with his elementary students in a public school asserted, 'Frankly, subscribing to this platform is worth the hassle, given its benefit to me and my students in teaching the Arabic language'. Other participants (n = 3) said that the monetary cost of the platform did not matter much because their private schools guaranteed the payment of fees. One teacher indicated that 'as long as my school pays the subscription fees for me and my students, I will continue using it and take advantage of its features in improving the literacy skills of my students'.

Social influence was mentioned by some (n = 3) as a motivating factor for them to use the IRA digital platform. One of the teachers mentioned that she heard about the potential of integrating this platform in teaching literacy from a colleague who worked in a private school. Another teacher stated, 'I did not use the platform, but I heard about it from my colleague who works in a private school, as its use is mandatory by the school administration in teaching Arabic'. Another teacher indicated that 'the use of such platforms is in line with modern and global trends toward digitisation in language teaching. The school administration certainly expects us, as teachers, to keep pace with digital transformation and employ such platforms in teaching Arabic'.

4.2.2. Theme 2: Challenges of IRA Digital Platform Use

The participants shared many difficulties in using the IRA digital platform. This theme included two sub-themes: facilitating conditions and effort expectancy.

Facilitating conditions were highlighted by many participants (n = 9) as hindrances to their intention and use behaviour of the IRA digital platform. One mentioned that the lack of school support and encouragement to use educational digital platforms was a reason not to use the IRA digital platform with their students, especially in public schools. One teacher indicated that 'we, as teachers in public schools, suffer from a lack of training and professional development in the use of digital platforms. This is a major obstacle'. On the other hand, the teachers (n = 3) required to use the IRA digital platform in private schools mentioned that the lack of support and cooperation from parents made using this platform

difficult. From their point of view, the successful utilisation of the IRA digital platform highly depends on parents' collaboration with teachers, as the parents need to follow up with the learning tasks that their children are required to complete. One teacher stated that 'using this platform, especially with the primary grades, requires close follow-up by the parents. Sometimes, I have to contact one of the parents personally through social media applications to remind them of their children's overdue learning tasks'.

Effort expectancy also contributed to the difficulty of using the IRA digital platform. Five of the participating teachers who worked in public schools indicated that using digital platforms for teaching required effort and time, which lessened their intention to use them, especially with the lack of their schools' support and encouragement. For example, one of the participants indicated that 'because of our limited experience in dealing with the distance education system in general and digital platforms in particular, prior to the COVID-19 pandemic, I think it requires more effort and time to explore and deal with its content, features and tools and integrate it effectively in literacy teaching'.

5. Discussion and Implications

Digital learning scenarios have been dramatically transformed post-pandemic. Teachers' acceptance and adoption of mobile learning through digital learning platforms is an emergent issue among Saudi teachers. Prior to the pandemic, teachers' use of digital technologies in K–12 education was voluntary. However, the near-immediate shift to distance education has made the use of digital platforms necessary. The utilisation of digital platforms supports the framework for blended education, which is expected to become common for every Saudi teacher in the K–12 context. Studying the factors that influence teachers' acceptance of the use digital platforms is vital, as the success of mobile education in the future depends largely on teachers' beliefs [33]. This study investigated the UTAUT2-related factors that contribute to the prediction of teachers' intentions and use behaviours of the IRA digital platform to enhance students' literacy skills in preschools and elementary schools in Saudi Arabia. These factors were performance expectancy, effort expectancy, social influence, facilitating conditions, hedonic motivation, price value, and habit. The following section discusses the results obtained in this study and their implications.

The quantitative results revealed that hedonic motivation ($\beta = 0.355$) was the most determinant factor in predicting teachers' behavioural intentions to use the IRA digital platform. This means that when teachers consider using the IRA digital platform to be a pleasurable experience, they are likelier to use it in the future. These results align with previous research studies on teachers' acceptance of digital technology [40,41,48,49]. Several factors contributed to the teachers' acceptance of the IRA digital platform: the attractive content and features (e.g., the digital stories, the interactive videos, and the gamified learning activities) of the platform itself, the desire to keep abreast of tech trends in education, and encouragement from school administration about integrating new digital technologies into teaching practices. Although habit was not a significant influence on teachers' actual use, it was the second strongest predictor ($\beta = 0.222$) of their behavioural intentions to use the IRA digital platform. Habit is related to the outcomes of prior and future experiences [26], signifying that the more teachers experience using the IRA digital platform, the more willing they are to use it for teaching purposes. Further, the more teachers expect their use of this platform to be automated, the more they intend to use it in the future. With respect to teaching literacy, habit was revealed to be an important predictor of participants' behavioural intentions to utilise the IRA digital platform in this study. This result agrees with previous research on teachers' acceptance of digital technology [16,39,41,48]. The qualitative results indicated the two main reasons that teachers believed that using this platform would become a regular post-pandemic practice: the Ministry of Education's formal adoption of digital learning platforms in blended education and the expected benefit of achieving favourable learning outcomes with the IRA digital platform.

Effort expectancy (β = 0.209) was shown to affect the participants' behavioural intentions to use the IRA digital platform, which was also indicated by Omar et al. [37], Kim and Lee [39], and Dahri et al. [40]. When teachers perceived the IRA digital platform as user-friendly and easy to use, the probability of their incorporating it into their teaching process was higher. Effort expectancy was stressed by teachers as the most prominent reason that encouraged them to use the IRA digital platform in their teaching practices. Furthermore, performance expectancy (β = 0.163) was shown to indicate participants' behavioural intentions to utilise the IRA digital platform, meaning that its use would contribute to higher job performance levels and increase the participants' teaching productivity. Previous studies [33,39–41] support this result. The interviewed teachers emphasised that using the IRA digital platform was beneficial in terms of improving students' literacy skills and accomplishing teaching tasks effectively (e.g., assessing learning tasks, tracking students' progress, and extracting useful reports). Price value (β = 0.125) was also shown to influence the participants' behavioural intentions to use the IRA digital platform, which is a result shared with several other studies researching the use of technologies [38,49,51]. Therefore, teachers' perceived advantages of using the IRA digital platform depend on its monetary value [26,32]. To better understand the effect of price value on teachers' behavioural intentions, the qualitative results showed that teachers' perceptions of the monetary costs associated with using the IRA digital platform varied according to their school sectors, as policies governing public education and private education differ in terms of the financial support provided to teachers [62]. Generally, in Saudi Arabia, private schools financially support the use of digital technologies for their teachers and students. On the other hand, public schools encourage teachers to adopt digital technologies with little logistical support. That is, public school teachers make their own decisions about using digital technologies and are responsible for paying all the related fees. Our results emphasise that price value greatly influences teachers working in Saudi public schools.

Behavioural intention (β = 0.564) was found to be the strongest predictor of the actual use of the IRA digital platform. Most research studies on teachers' acceptance of integrating technology in teaching practices have indicated the same result [33,40,41,48,53]. Facilitating conditions (β = 0.160) accounted for the second strongest predictor of teachers' actual use, despite its insignificant effect on teachers' behavioural intentions to use the IRA digital platform. Similar results were found by Tseng et al. [38], Kim and Lee [39], and Zhou et al. [48]. Accessibility to technical and institutional support encourages more teachers to accept and adopt the digital platform in the teaching–learning process. In addition, the availability of training sessions aimed at promoting teachers' digital knowledge and skills seemed to increase their readiness to utilise the IRA digital platform in their teaching practices, and facilitating conditions were highlighted by participants as a major obstacle to utilising the IRA digital platform. Limited facilitating conditions—such as professional development programs, technical support, support from the school administration, and encouragement and parental follow-up on children's learning tasks—appeared to hinder teachers' actual use of the IRA digital platform [24]. Social influence was mentioned by a few participating teachers as one of the factors that influenced their decision to adopt the IRA digital platform. Moreover, the quantitative results revealed that social influence showed no significant effect on the behavioural intention of using the IRA digital platform. Similar results were reported by Nikolopoulou et al. [33] and Avcı [41]. This finding means that teachers are not necessarily influenced by the views of their peers, school leadership, or students' parents regarding the importance of using the IRA digital platform. A possible explanation for this result is that the utilisation of digital learning platforms is not a common practice among Saudi teachers in preschool and elementary schools. Additionally, during the pandemic, a digital platform called Madrasati was launched for K–12 teachers to deliver distance learning. Thus, the teachers' knowledge and experiences were centred on using that digital platform, meaning that exploring others, such as IRA, was not of major concern.

The findings of the present study have yielded several important applications for teachers, school leadership, and educational policy makers in Saudi Arabia. In terms of teachers, Arabic language teachers must strive to professionally develop themselves with respect to mobile education by using digital platforms for teaching literacy. Teachers should seek to share experiences with their peers and discuss and exchange the best educational practices concerning the use of digital learning platforms. Given the important role of parents in following up on their children's usage of the IRA digital platform (as stated by teachers in this study), teachers should explain to parents the benefits of using the platform for learning achievements and encourage them to acquire access to devices (e.g., smartphones or tablets) to enable their students to use it. Our findings imply that school leaders should disseminate a culture of integrating digital platforms into teaching practices among literacy teachers. School leaders should foster a climate in which teachers are motivated and appreciate using the IRA digital learning platform. Additionally, they should provide technical and pedagogical support for teachers to facilitate the effective use of the IRA digital platform. In addition, teachers need to be provided with opportunities for training and professional development in using digital learning platforms. Training programs should be centralised to enhance teachers' digital knowledge and skills. There should also be a focus on the benefits of the platform for enhancing students' literacy skills as well as for raising teachers' teaching efficiency and enhancing their productivity. In terms of educational policy makers in Saudi Arabia, since the results showed the impact of the facilitating conditions and price value among the factors affecting the use of the IRA digital platform in public schools, we suggest that the Ministry of Education launch a sub-platform affiliated with the Madrasati digital platform. The sub-platform would specialise in teaching Arabic literacy; it would be the first Saudi digital platform for teaching Arabic to preschools and primary schools compatible with digital dominance in education. We advise that subscriptions to this sub-platform be free for Saudi teachers, their students, and parents. This would facilitate, encourage, and motivate the acceptance and adoption of the digital platform by teachers and their students. Finally, when designing digital platforms for teaching and learning literacy, the digital content must be interactive, motivational, and interesting for both the teachers and students. User interfaces should be user-friendly, easy to navigate, and should be able to be easily downloaded and handled on smart devices for teachers, students, and parents.

6. Conclusions, Limitations and Future Work

This study utilised the UTAUT2 model to identify factors predicting teachers' intentions and use behaviours of the IRA digital platform with respect to teaching Arabic literacy in Saudi Arabia. Based on a mixed-methods approach, we employed a structural equation modelling design for the quantitative analysis and coding and a thematic approach for the qualitative analysis. The quantitative results indicated that hedonic motivation, habit, effort expectancy, performance expectancy, and price value were significant predictors of teachers' behavioural intentions to use the IRA digital platform for teaching literacy. Behavioural intentions and facilitating conditions were found to be significant determinants of teachers' actual use of the IRA digital platform. The qualitative results yielded two main themes: the advantages and challenges of the IRA digital platform's use. Hedonic motivation, habit, effort expectancy, performance expectancy, price value, and social influence were indicated by the interviewed teachers as important factors associated with the advantages of using the IRA digital platform; facilitating conditions and effort expectancy were mentioned by the respondents to be associated with challenges.

Some limitations were found in this study. Since we used convenience sampling, all the participants were from the Eastern Province. As a result, generalising the results to all Arabic language teachers from the other four provinces in Saudi Arabia is difficult. Therefore, future studies should acquire data from a larger and more diversified population. In terms of methodology, this study relied on the use of the seven-factor UTAUT2 model. Other factors may affect the acceptance and adoption of digital learning platforms among

Arabic literacy teachers. Therefore, future studies should investigate other factors that may affect teachers' intentions and use behaviours, such as computer self-efficacy and teachers' technological knowledge, via an extended UTAUT2 model. In addition, future research should inspect the moderating influences of gender, age, and experience. Finally, we propose that future studies should be conducted to examine Arabic language teachers' perceptions about the potential benefits of the Madrasati digital platform that can support and enhance literacy teaching, as well as the characteristics and features that should be considered in the platform's design.

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