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Investigating the Factors Influencing E-Book Acceptance Among Students from Less-Privileged Regions: A Case Study on Students of Shahrekord Universities

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Abstract

Background: E-book is one of the forms of network publishing that has attracted extensive attention.
Objectives: The purpose of this study was to investigate the factors affecting the acceptance of e-books among students of less-privileged areas such as Shahrekord.
Methods: In this descriptive, analytical study, 371 students of Shahrekord University were selected through simple random sampling. The research instrument was a researcher-made questionnaire consisting of 48 questions that was designed with the help of research literature related to the technology acceptance model and interviews with five educational technology experts. Data were analyzed using ANOVA, Independent t-test, multiple regression and Pearson correlation tests.
Results: Cultural factors had a significant impact on users' attitudes and their use of e-books. A significant relationship was observed between the components of usefulness, ease of use, perceived enjoyment, cultural influences and attitude with the acceptance of e-books ($P < 0.001$). Also, the best predictors of acceptance and use of e-books were the components of perceived enjoyment, barriers, cultural influences, and attitudes.
Conclusions: The results regarding the identification of the factors affecting the acceptance of e-books can be used in virtual, non-formal and distance learning centers to design primary and supplementary educational resources. Design engineers and e-book providers can also use the findings of the current research to improve and promote electronic products.

Keywords: University, E-Book, Technology Acceptance Model, Students

1. Background

Today, electronic devices and equipment have affected all levels of life and have led to major changes in human life. With the expansion of virtual universities and e-learning as well as the access of students to computers and the Internet, the industry has gradually entered the field of books to the extent that e-books can be considered as a complement or substitute for educational institutions. The e-book is a new phenomenon that has affected educational systems, and its main purpose is to overcome the limitations that print books face. The main feature of e-books is its dynamic, interactive and flexible nature that can be transformed into various shapes and formats and is accessible at any time and place (1).

One of the potential advantages of e-books is their flexibility and accessibility compared to paper texts. Other features include increased visual appeal due to features such as static and animated graphics, as well as the potential to add supplementary materials such as audio sets and more (1). According to the National Intelligence Agency's definition, e-books mean digital documents with or without a license that can be searched and can be compared to a printed book (2). The e-book can be classified into four groups according to its features, facilities and functions, which are detailed below.

Text-based e-books: These e-books are text-only and contain no images, charts, or tables.

Picture e-books: In these books, some images, charts, and tables can also be found along with text. There are also some animated images and animations for more impact.

E-books with audio features: These books use audio features to interact more and better with their audiences, which is also usable for the blind.

Multimedia e-books: These books combine all the features of the previous three groups and utilize audio, video, animation, and charts to further engage their readers and users (3).

Although the e-book was introduced four decades ago, many scholars have claimed that its spread in many countries was slow (4). They believe that e-book acceptance was not as high as expected. For example, the results of a study by Roesnita and Zainab performed in Malaysia among 250 undergraduate computer science and information technology students indicated that only 39% of respondents preferred e-books (5). The results of the study by Chong et al. showed that e-book acceptance rate was 52.5% (6). Abdullah and Gibb by conducting a research on Scottish higher-education students found that 60% of respondents did not use e-books. They cited the lack of awareness and publicity about access to e-books as the reasons for this finding (4).

In recent decades, various models of technology adoption have been designed and presented. The literature on technology acceptance shows that the theory of reasoned action, the theory of planned behavior, the decomposed theory of planned behavior, the technology adoption model, the secondary model of technology adoption, and the integrated theory of technology adoption and application are among the widely used models (7), the most valid of which is the technology adoption model (8). The model is based on two factors: "mental perception of usefulness and mental perception of ease of use". These two factors influence people's attitude towards using a technology and make the decision to use that technology and ultimately the use of technology.

Research results show that models have different functions with regards to different technologies and their acceptance. The effectiveness of technology is positively related to its adoption. If potential users of a technology do not resist using it, its intended goals cannot be achieved (9). Therefore, it is important to understand why users accept or reject to use a technology. If the factors affecting IT adoption are identified and understood, it will be possible to identify and understand IT systems and design better ones and thereby, increase user acceptance (10).

The results of studies have shown that in addition to the type of e-books, their features are also effective in their use (11, 12). The results of Roskos and Burstein's research, "Fundamentals of an E-Book Learning Model", show that e-books require factors such as better quality, more accurate book design specifications in the classroom, trained qualified teachers on how to use the educational approaches for sharing the content of books (11). Also, the results of Wang and Bai's research showed that aesthetics, ease of use, user satisfaction and suitability for the type of use are important in the acceptance of e-books (12).

Studies in advanced countries show that libraries are expanding their e-books. For example, about 95% of academic libraries in the United States are equipped with e-books and 9.6% of the librarirs' overall budget is dedicated to the purchase of e-books. The cost will increase to 19.5% by 2017 (13).

Considering factors such as the position of books in centralized education systems, university-level curriculum designers should consider e-books as a major or supplemental source of instruction in designing and revising curricula. In less-privileged areas such as Shahrekord, where access to newly published printed books is less compared than privileged areas such as Tehran, access to digital books is crucial. Due to cultural, linguistic, and other problems discussed in the present study, most students are still looking for print versions of books, and electronic versions are not widely accepted by the community, especially students. For the optimal use of these information resources, research is needed on the factors influencing technology adoption among these students and what university officials need to do to adopt e-books.

2. Objectives

On the other hand, most studies in recent years on the acceptance of e-books in Iran have been conducted in privileged universities and cities, and very few studies have been conducted in less-privileged cities. Therefore, the present study aimed to investigate the factors affecting the adoption and use of e-books among Shahrekord University students based on the technology acceptance model.

3. Methods

This was a survey-based study, the statistical population of the study consisted of all students of Shahrekord University in 2016. Thus, through simple random sampling in which individuals have an equal chance of being selected, 371 students were chosen using the Morgan table (14). The students studying in Shahrekord universities in 2016 were enrolled in the study.

A researcher-made questionnaire was used for data collection. A questionnaire was used to interview five educational technology experts. The questionnaire consisted of two parts. The first part contains items on demographic information and the second part includes 48 items related to six categories (8 questions on usefulness, 8 on ease of use, 10 on perceived enjoyment, 4 on cultural influences, 8 on attitude, and 10 related to barriers to use). Responses were rated on a 5-point Likert scale (ranging from strongly agree

to strongly disagree). Each student answered the questionnaire within 10 minutes. Content validity was used to determine the validity of the questionnaire. For this purpose, the questionnaire was given to four faculty members of Isfahan University and its validity was confirmed. The internal reliability of the questionnaire was estimated to be 0.89 using Cronbach's alpha coefficient. Cronbach's alpha coefficients of usefulness, ease of use, perceived enjoyment, cultural influences, attitude and barriers to use were 0.73, 0.81, 0.88, 0.78, 0.82 and 0.76, respectively.

Descriptive statistics were reported in frequency, percentage and mean. Inferential statistics were also analyzed using ANOVA, independent *t*-test, multiple regression and Pearson correlation in SPSS version 19.

All the ethical principles in human studies, including obtaining informed consent, confidentiality of the data, and obtaining legal authorization to initiate the study, were observed in this review. The research was approved by the Ethics Committee of Payame Noor University under the code IR.PNU.REC.1397.059.

4. Results

Overall, 166 (53%) of the participants were male, 147 (47%) were female, and 58 (16%) had not declared their gender. About 52% (194) of the samples were undergraduate and the rest had PhD, MA and Associate's degrees. Also, 26% of the participants were in the technical engineering group (n = 98) and 21% in the medical sciences group (n = 78). Nineteen percent (n = 70) of the participants also belonged to each of the basic sciences and humanities groups. Fifty-four (14%) of the study participants did not declare their study group.

Research question: Is there a significant relationship between e-book acceptance and the factors of usefulness, ease of use, perceived enjoyment, cultural influences, and barriers to use?

According to the data in Table 1, the correlation coefficients of usefulness, ease of use, perceived enjoyment, cultural influences, attitude, and barriers to using and accepting e-books by students were significant at $P < 0.05$. Therefore, there was a significant relationship between these factors and the acceptance of e-books. According to the coefficient of determination, 42% of the variance of usefulness, 20% of ease of use, 36% of perceived enjoyment, 16% of cultural influences, 21% of attitudes, and 4% of barriers to using e-books were related to acceptance of e-books.

Standardized regression coefficients showed that among the factors affecting e-book acceptance, ease of use, attitudes and barriers can be good predictors of e-book acceptance and use. However, perceived enjoyment and cultural influences were not significant and were not good predictors of students' acceptance and use of these books (Table 2).

Table 1. Correlation Coefficients of Factors Affecting E-Book Acceptance (n = 371, P Value = 0.001)

Factors	r
Usefulness	0.654
Ease of use	0.444
Perceived enjoyment	0.604
Cultural influences	0.402
Attitude	0.462
Barriers to use	-0.207

5. Discussion

The introduction of technology and computers into the realm of life has influenced one of the main educational tools, books and educational texts and has created a phenomenon called e-books. Therefore, the present study aimed to determine the factors affecting students' acceptance of e-books. Based on the results, the factors of usefulness, perceived enjoyment, ease of use, cultural factors and decision-making barriers affect the acceptance of e-books among students of Shahrekord universities. These findings are in line with the results of some studies on usefulness components suggesting a relationship between usefulness and e-book acceptance (5, 10, 15, 16).

Other research on technologies has also placed great emphasis on attitudinal and perceived value factors for technology use (5, 17). In this context, it is important for students to understand how to use an e-book and to understand the benefits of using it. Of course, the use of printed books has also become a habit, and most students still consider the Internet and computers as recreational tools and are more familiar with computer games and different types of Internet entertainment and are less familiar with their other uses, especially the scientific and educational uses of e-books. In this regard, teachers can also use electronic articles and books in their teaching.

The results of the study of the relationship between ease of use and acceptance of e-books are also in line with the findings of some previous studies (5, 10, 15, 18, 19). These studies reported that students consider the following factors effective: portability, access to e-books when libraries close, lack of access to a library, and quick search for e-book titles (5, 10, 15, 18, 19). Therefore, the creators of these tools should seek to provide greater ease and functionality of menus or accessories that make these tools easier to use. Producers of articles and textbooks should also use titles

Table 2. Results of Multiple Regression Analysis to Predict Factors Affecting E-Book Acceptance

Model	Non-Standard Coefficients		Standardized Beta Coefficients	t	P Value	95% Confidence Interval	
	B	SD Error				Upper Bound	Lower Bound
Constant value	7.261	1.456	-	4.987	< 0.001	10.127	4.395
Ease of use	0.279	0.054	0.298	5.168	< 0.001	0.368	0.173
Perceived enjoyment	0.025	0.053	0.026	0.464	0.643	0.130	-0.080
Attitude	0.251	0.049	0.314	5.080	< 0.001	0.348	0.153
Cultural influences	0.091	0.050	0.115	1.835	0.068	0.189	-0.007
Barriers	-0.103	0.028	-0.169	-3.746	< 0.001	-0.049	-0.158

that make searching for information faster and easier, and use of these should not require relying on extra skills.

One of the factors affecting the adoption of information technology is the positive attitude of individuals. This finding is consistent with previous research results (15, 17, 20, 21). The results of a recent study (15) showed that the attitude towards using electronic services had a significant effect on citizens' tendency to use municipal electronic services, which was not in line with the findings of Roesnita and Zainab (5). In addition, the findings regarding the impact of barriers to the acceptance and use of e-books were in line with the results of Shaverdi (22).

Overall, the results of the present study showed that the elements of technology acceptance pattern in less-privileged areas are similar to those in privileged areas; however, perceived value and cultural factors are more important in less-privileged areas. This may be due to less familiarity of the students in these areas than other areas, which may require more investment from government officials such as the Ministry of Science and Research and Higher Education because of less access to advanced Internet facilities and computers. Compulsory courses to enhance the computer and internet literacy of university professors and emphasize the benefits of using virtual and combined education should be considered.

Compulsory in college does not mean coercion, but it means free choice to receive annual promotions. The perceived values and understanding the importance of adopting a technology in deprived areas are of great importance, as the benefits of emerging technologies are taught, the value of using them becomes clear to users and as a result, they will try to use them. Therefore, timely and continuous training will increase the perceived value and culture of using these tools. Therefore, curriculum experts and specialists in universities and higher education centers should take this into account and consider these findings when making up-to-date and useful planning for students.

To increase the use of e-books, students can be introduced to virtual libraries and virtual bookstores and to develop a positive attitude towards these types of facilities, and more combined education (in-person and virtual) at different levels of education should be provided. It is also worth focusing on educating users of e-books and paying attention to familiarizing faculty members with the specific features of e-texts, their types and the use of e-books as a resource for teaching. The following are suggestions for expanding and improving the use of e-books.

It is useful to conduct research separately on each of the factors affecting the acceptance of e-books for a deeper investigation. Further research should be carried out with regard to other variables such as community culture, infrastructure and electronic readiness. Adaptive studies should be conducted on ways to create and expand the use of e-books in the light of the experiences of advanced countries.

Supplementary Material

Supplementary material(s) is available here [To read supplementary materials, please refer to the journal website and open PDF/HTML].

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Footnotes

Authors' Contribution: Zahra Babadi Akashe designed and performed the experiments. BiBi Eshrat Zamani derived the models and analyses the data. Ali Kheradmand assisted help in revise.

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Informed Consent: All moral regulations such as getting permission for deliberate participating in study, participants' satisfaction for continuing, privacy rights, copy rights and to get legal authorization from related organizations for needed information were considered.

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