

Academic Librarians' Attitudes towards Augmented Reality

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ARTICLE INFO

Article Type:
Original Article

Article History:
Received: 26 Aug 2021
Accepted: 2 Nov 2021
ePublished: 12 Mar 2022

Keywords:
Technology,
Augmented Reality,
Libraries, Medical,
Libraries,
Librarians

Abstract

Background. Augmented reality (AR) is a digital layer in the physical environment, which adds virtual elements to the real world. Academic libraries must meet certain criteria to enter fourth-generation libraries, one of which is the use of new technologies. The aim of this study was to investigate academic librarians' views on the application of components of AR technology in the libraries of medical universities.

Methods. The study was a cross-sectional survey study. The statistical population of the study included all librarians working at medical science universities in Iran. The sample size comprised 183 librarians who participated in the present research study. Quantitative research approach and research tool was a researcher-made questionnaire. Internal validity of the questionnaire was assessed through CVI and reliability was assessed, using ICC (validity within and between assessors). The face validity of the questionnaire was confirmed using the opinions of 10 experts in the field of information science and AR technology and its reliability was obtained with Cronbach's alpha correlation coefficient of 0.96 and test-retest method. Using the online questionnaire, the librarians' perspective data on the components of familiarity, facilities, application, advantages, opportunities and limitations were collected in the form of 5 Likert questions. Data analysis with SPSS software was used through independent t-test, ANOVA and Tukey to evaluate the status of AR technology components.

Results. The general attitude of librarians towards the components of application, facilities, advantages, opportunities and limitations of AR technology was on the scale of five Likert options with an average total score of 3.75. 0.05. Overall, 73.65% of librarians agreed with AR technology and 86.99% agreed with its use component in the libraries of medical universities. The results of the Tukey test showed that more graduate students than those with doctoral degrees agreed with the component of facilities available in university libraries to launch AR. Librarians older than 50 years considered the AR component in library management and assistance to librarians to be more effective than those under 30 years of age ($P < 0.05$).

Conclusion. According to the results of the present study, the most important components for the use of AR technology in the libraries of medical universities to strengthen user education included the existence of appropriate content, usefulness, providing diverse services, user guidance, location and the opportunity to implement AR on a larger scale. The librarians' attitudes toward launching AR technology were favorable and they agreed with its applicability.

Dalili- Saleh M, Salami M, Soheili F, Ziaei S. Academic Librarians' Attitudes towards Augmented Reality. *Depiction of Health*. 2022; 13(1): 18-32. doi: 10.34172/doh.2022.02. (Persian)

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Extended Abstract

Background

Augmented reality (AR) is a digital layer in the physical environment, which adds virtual elements to the real world. Academic libraries must meet certain criteria to enter fourth-generation libraries, one of which is the use of new technologies. The aim of this study was to investigate librarians' views on the components of augmented reality technology in the libraries of medical universities.

Methods

The research method was survey and the type of study was applied. Quantitative research approach and research tool was a researcher-made questionnaire. The statistical population comprised 183 academic librarians in medical science universities under supervision of Ministry of Health and Medical Education in Iran. Data was collected by using an online survey conducted with 52 questions to examine familiarity of librarians with AR, its application, potential advantages, opportunities, and challenges in medical science university libraries in 2021. A researcher-made questionnaire was used to collect data. This instrument had ten sections. It first examined the respondents' demographic information (age, sex, occupation, and level of education). The other sections examined their familiarity with AR technology (one question), the application of AR technology (12 questions), facilities and requirements of AR technology (four questions), acceptance of AR (three questions), advantages of AR (nine questions), helping with library management (seven questions), helping users (four questions), helping librarians (eight questions), AR technology limitations (one question), and AR technology opportunities (three questions). The reliability of an instrument is related to the degree of its stability in measuring the intended construct. To ensure the face and content validity, the

questionnaire was examined and approved by several professors and experts, and then modified based on their comments. The internal validity of the questionnaire was assessed through CVI and its reliability was assessed using ICC (validity within and between assessors). The face validity of the questionnaire was confirmed using the opinions of 10 experts in the field of information science and augmented reality technology and its reliability was obtained through test-retest method and the calculated Cronbach's alpha correlation coefficient was 0.96. Using the online questionnaire, librarians' perspective data on the components of familiarity, facilities, application, advantages, opportunities and limitations were collected in the form of 5 Likert questions (from grade 1 strongly disagree to grade 5 strongly agree). Data analysis by SPSS software was used through independent t-test, ANOVA and Tukey to evaluate the status of augmented reality technology components.

Results

The librarians' overall attitude toward AR technology was assessed on a five-point Likert scale, with the mean of 3.75 and a standard deviation of 0.59. In general, they agreed with 73.65% of the ten items. Compared to other components, the application of AR technology had an average of 4.17(86.99%) and the highest score. The general attitude of librarians towards the components of application, facilities, advantages, opportunities and limitations of augmented reality technology was at a desirable level, 73.65% of librarians agreed with augmented reality technology and 86.99% agreed with its use component in the libraries of medical universities. The results of the Tukey test showed that more graduate students than those with doctoral degrees agreed with the component of facilities available in university libraries to launch augmented reality. Librarians older than 50 years

considered the augmented reality component in library management and assistance to librarians to be more effective than those under 30 years of age ($P < 0.05$). The ANOVA measured the relationship between the mean components of AR technology and the participants' age. According to Tukey's test, in terms of helping with library management, there was a significant difference (p -value = 0.007) in the age groups of >50 and <30 years, the score being higher in the >50 years' group. Based on Tukey's test, the relationship between librarianship and different age groups was evaluated, and the results showed a significant difference between the age groups of <30 and >50 years (p -value = 0.04). There was no significant difference between the components of AR technology based on the field of study. According to Tukey's test, the relationship between total score and different age groups was evaluated. The results indicated a significant difference between the average age groups of <30 years and >50 years (p -value = 0.03). The total score was higher in the >50 years than the <30 years' age group. Librarians' familiarity had an average of 3.02; 60.54% of them were familiar with AR technology. Thus, their familiarity with AR technology was above average (average = 3 in Likert). To assess their views on the use of AR technology (application) in the libraries of medical universities, 12 sub-questions were asked about AR technology use, 83.48% of the librarians agreed with the AR applications in the library. Thus, their attitudes toward AR technology efficiency were at an optimal level. In terms of facilities and requirements for launching the AR technology, four items were provided in the questionnaire, 56.53% of the librarians agreed with the AR facilities and requirements in the academic library. Their attitudes towards facilitating the management of university libraries using technology were assessed via seven items about AR, 78.28% of the librarians agreed with all the statements. In terms of acceptance of technology, three items were

provided in the questionnaire, 56.61% of the librarians agreed with the AR acceptance. Regarding the advantages of AR technology, nine items were provided in the questionnaire, 74.29% of the librarians agreed with the all items. Thus, their views on the benefits of technology in library management were at a desirable level. Eight questions in the category of helping librarians were asked and, the librarians agreed with all the statements (79.48%), showing a desirable level. The librarians were also asked about the specifics of AR technology for library users in four items. Based on the findings, a desirable level of agreement was found with all the statements (79.48%). One question was posed on the limits and challenges of AR technology, with 59.67% agreement, the agreement level was above average. The librarians also mentioned opportunities that AR technology conferred in three areas, 77.77% of them agreed with all of the statements.

Conclusion

Librarians' attitudes toward launching augmented reality technology were favorable and they agreed with its applicability. According to the results of the present study, the most important components of the use of augmented reality technology in the libraries of medical universities to strengthen user education included the existence of appropriate content, usefulness, providing diverse services, user guidance, location and opportunity to implement augmented reality on a larger scale. The application of AR technology, measured by 12 items from the point of view of librarians, had the highest score compared to other components. The librarians believe in the applicability of AR technology in different sections of the library. The benefits of AR technology for librarians are somewhat clear, and this is due to the nature of any technology and people's expectations of it. Therefore, based on the results, AR technology is potentially useful. According to the librarians,

emerging technologies primarily create opportunities and facilitate works due to using new library software, databases, devices, and tools. University libraries must implement new equipment according to the needs of society to retain their users and disseminate information and knowledge to the audience as their main goal. The librarians' attitude toward AR technology was desirable.

Practical Implications of Research

The results of the study show that librarians acknowledge the applicability of emerging augmented reality technology. Improving the quality of library services, assisting librarians and the community of academic library users is done by librarians due to the acceptance of technology, so the libraries of medical universities can take steps to strengthen the specialized affairs of libraries by launching augmented reality technology in the library.

Ethical Considerations

In the present study, attention has been paid to all the items that are ethical requirements,

including the condition of fidelity and honesty. Completion of the questionnaire did not require entering the name and the necessary assurance in the field of confidentiality had been given to the user. The participants' consent had also been obtained before they participated in the study.

Conflict of Interest

There is no conflict of interest among the authors.

Acknowledgment

The present article is an excerpt from the doctoral dissertation entitled "Study of Augmented Reality Technology in the Libraries of the Ministry of Health and Medical Education of Iran" with the code 1202.8633. The authors of this article are grateful for the support of Payam-e-Noor University in conducting research and publishing this article, and for the esteemed reviewers who promoted the article.