Usability of Mobile Applications in Saudi Higher Education: An Exploratory Study

Nada Al-Wabil(✉)

Department of Information Technology,
Institute of Public Administration, Riyadh, Saudi Arabia
wabiln@ipa.edu.sa

Abstract. This paper reports on a comprehensive survey of mobile applications offered by higher education institutions in Saudi Arabia. In this study, we examine the accessibility, User Experience (UX) design, and usability of services offered by these applications. In recent years, research has shown growing trends in mobile application adoption and usage in the context of higher education in Saudi Arabia. Evidence from the local context suggests that mobile applications have potential to increase retention of students, enhance teaching and learning, and facilitate the provision of services. Our understanding of mobile application services offered by public and private higher education institutions in Saudi Arabia is inadequate. Therefore, we present a synthesis of mobile applications and a categorization of types, platforms, target users, and examine their usability. The study included mobile applications and services offered by twenty six public universities and nine private universities. Design implications of our usability review for these mobile applications that are offered by higher education institutes for students, faculty and administration are discussed.

Keywords: E-Learning · Mobile applications · Arabic interface · Saudi Arabia

1 Introduction

Recent advances in mobile technologies have accelerated the adoption of technology in higher education. Evidence, from the local context of Saudi Arabia, suggests that mobile applications have potential to increase retention of students [1], enhance teaching and learning [1–3], [5] and in the provision of services [4]. While HCI research has examined design considerations of Arabic interfaces for systems in higher education, our understanding of design consideration for mobile application services offered by public and private higher education institutions in Saudi Arabia is inadequate.

Universities in Saudi Arabia have evolved [18] from Umm Al-Qura University opening in Makkah al-Mukarramah in 1949, making it the first higher educational institution in the Kingdom of Saudi Arabia, to 35 universities in 2015 [15, 18]. The students' population growth has risen in 2014 to more than 1,300,000 students [17]. The faculty population in Saudi higher education institutions grew to more than 64,000 faculty members in 2014 [17]. Technology services for users in the context of higher

C. Stephanidis (Ed.): HCII 2015 Posters, Part II, CCIS 529, pp. 201–205, 2015.
DOI: 10.1007/978-3-319-21383-5_34

education institutions evolved from traditional web-based registration and enquiry services, to navigation apps indicating innovation in providing services for academic populations. IT infrastructure is also rapidly developing which extends the opportunity for more service accommodation, and integration [10, 19].

This paper reports on a comprehensive survey of mobile applications offered by higher education institutions in Saudi Arabia. In this study, we present a synthesis of mobile applications and a categorization of types, platforms, target users, and examine their usability. We examine the availability, accessibility, User Experience (UX) design, and usability of services offered by these applications.

The paper is structured as follows. The following section describes the diffusion of mobile applications in higher education. Section 3 investigates the usability and accessibility of these apps by surveying the literature reporting on applications in the context of study. We conclude in Sect. 4 with a summary of insights gained from the exploratory study and directions for future research.

2 Diffusion of Mobile Applications in Public and Private Universities in Saudi Arabia: Case Study

In this study, we examined the mobile applications available on iOS and Android platforms for 35 universities in Saudi Arabia. Preliminary findings show that public universities have the lead in providing mobile applications when compared to private universities in Saudi Arabia as evident in Tables 1 and 2. Notably, some applications are available online for institution-specific services (e.g. course-related services or educational technology applications for specific courses) but were not linked to the institution and thus were not included in the list.

Table 1. Overview of mobile applications in public universities

University name	iOS apps	Android apps
King Abdullah University of Science and Technology	2	2
Umm Al-Qura University	1	3
Islamic University	2	2
Al-Imam Mohammad Ibn Saud Islamic University	2	4
King Saud University	9	17
King Abdulaziz University	3	16
King Fahd University of Petroleum and Minerals	2	2
King Faisal University	2	9
King Khalid University	5	6
Qassim University	3	3
Taibah University	2	4
Taif University	0	2
University of Ha'il	1	1
Jazan University	1	1

(*Continued*)

Table 1. (*Continued*)

University name	iOS apps	Android apps
Al Jouf University	1	1
Al Baha University	0	2
University of Tabuk	3	3
Najran University	0	2
Northern Borders University	1	7
Princess Nora bint Abdulrahman University	1	6
King Saud bin Abdulaziz University for Health Sciences	0	2
University of Dammam	1	3
Shagra University	0	0
Salman Bin Abdulaziz University	1	5
Almajmaah University	2	2
Saudi Electronic University	0	3

Table 2. Overview of mobile applications in private universities

University name	iOS apps	Android apps
Prince Sultan University	0	0
Effat University	1	1
Arab Open University	2	2
University of Buisness and Technology	0	1
Fahad Bin Sultan University	0	0
Prince Mohammad Bin Fahd University	0	1
Alfaisal University	1	1
Al Yamamah University	3	3
Dar Al Uloom University	0	1

As shown in Table 2, private universities have been lagging behind in terms of applications offered by the institutions. The emphasis is often more on teaching than research and development in private institutions, in addition to the fact that student and faculty populations of private institutions is smaller when compared to the public universities in this context of study.

While the majority of the mobile applications, that are available in the public domain, provide services related to the administrative and learning contexts of higher education institutions, some applications were designed for specific research contexts.

3 Mobile Applications: Design Considerations

Research on examining usability and accessibility in the context of higher education services have investigated visual design, user acceptance, and compliance with standards [13, 14]. In the Arab region, the issues of cultural design aspects relevant for

usability and accessibility have been reported in recent years [9, 11–13]. However, these interfaces were not in the context of systems developed for users in higher education apart from the university website usability survey of [13]. Within the context of Saudi Arabia, very few studies have examined interfaces and mobile services [7, 8, 16] and even fewer in the context of higher education. For example, the usability evaluation study of [6] examined e-government and reported the lack of accessibility compliance. Overall, the research examining higher education is relatively scarce. One example is a recent study examining website design in universities [15]; however the review did not focus on mobile applications which have specific design requirements that are not yet examined and more work needs to be done in this area. Design considerations for these apps is beyond visual design considerations but actually extends to the functionality and utility provided for an academic population on the go. Design considerations specific to the local context are alignment for bilingual interfaces and socio-cultural factors.

4 Conclusion

Trends and challenges in the provision of technology-enabled learning and technology-facilitated services in higher education are increasingly highlighted to address the issues hindering diffusion of innovations in higher education. Mobile technologies designed for teaching, learning, services and research resources that reside in the public domain of higher education institutions have impact on the momentum of technology integration in the contexts of education. The preliminary findings reported in this study, indicate patterns of diffusion of mobile application in the contexts of learning and services in higher education. Further work examines the specific usability and accessibility issues in the design of these mobile application with a focus on the socio-cultural factors in the interaction design for these applications in our local context.

References

1. Al-Fahad, F.: Students' attitudes and perceptions towards the effectiveness of mobile learning in King Saud University. Turkish Online J. Educ. Technol. TOJET **8**(2) Article 10 (2009)
2. AlMegren, A.: Status of e-learning at several major universities in Saudi Arabia. In: Proceedings of World Conference on e-Learning in Corporate, Government, Healthcare, and Higher Education 2011, pp. 1022–1028. AACE, Chesapeake, VA (2011)
3. Al-Harbi, K.: e-Learning in the Saudi tertiary education: potential and challenges. J. Appl. Comput. Inform. **9**(1), 31–46 (2011)
4. Alshwaier, A., Youssef, A., Emam, A.: A new trend for e-learning in KSA using educational clouds. Adv. Comput. Int. J. (ACIJ) **3**(1), 81–97 (2012)
5. Nassoura, A.: Students acceptance of mobile learning for higher education in Saudi Arabia. Int. J. Learn. Manag. Syst. **1**(1), 1–9 (2013)

6. Al-Faries, A., Al-Khalifa, H.S., Al-Razgan, M.S., Al-Duwais, M.: Evaluating the accessibility and usability of top Saudi e-government services. In: Janowski, T., Holm, J., Estevez, E. (eds.) Proceedings of the 7th International Conference on Theory and Practice of Electronic Governance (ICEGOV 2013), pp. 60–63. ACM, New York (2013)
7. Al-Nuaim, H.: An evaluation framework for Saudi e-government. J. e-Gov. Stud. Best Pract. **2011**, 12 (2011). doi:10.5171/2011.820912, Article ID 820912
8. AL-Zuabi, H.F., AL-Shaikhli, I.F.: Evaluation of usability problems of labor portal in Saudi Arabia. Int. J. Adv. Comput. Sci. Inf. Technol. (IJACSIT) **2**(1), 14–25 (2013)
9. Marcus, A., Gould, E., Wigham, L.: Culture-centered design: culture audit of screen designs for educational software in Saudi Arabia. In: Patrick Rau, P.L. (ed.) IDGD 2011. LNCS, vol. 6775, pp. 85–93. Springer, Heidelberg (2011)
10. Abdallah, S., Albadri, F.: A perspective on ICT diffusion in the Arab region. In: Abdallah, S., Albadri, F. (eds.) ICT Acceptance, Investment and Organization: Cultural Practices and Values in the Arab World, pp. 1–15. Information Science Reference, Hershey (2011)
11. Khashman, N., Ménard, E.: A study of cultural reflection in Egyptian government websites. In: Marcus, A. (ed.) DUXU 2014, Part II. LNCS, vol. 8518, pp. 139–147. Springer, Heidelberg (2014)
12. Khashman, N., Large, A.: Measuring cultural markers in Arabic government websites using Hofstede's cultural dimensions. In: Marcus, A. (ed.) HCII 2011 and DUXU 2011, Part II. LNCS, vol. 6770, pp. 431–439. Springer, Heidelberg (2011)
13. Marcus, A., Hamoodi, S.: The impact of culture on the design of Arabic websites. In: Aykin, N. (ed.) IDGD 2009. LNCS, vol. 5623, pp. 386–394. Springer, Heidelberg (2009)
14. Alotaibi, M.B.: Assessing the usability of university websites in Saudi Arabia: a heuristic evaluation approach. In: Proceedings of the 2013 10th International Conference on Information Technology: New Generations (ITNG 2013), pp. 138–142. IEEE Computer Society, Washington, D.C. doi:10.1109/ITNG.2013.26. http://dx.doi.org/10.1109/ITNG.2013.26 (2013)
15. MOHE: Academic institutions in Saudi Arabia: a statistical report. http://statistics.mohe.gov.sa/DCFiles/Universities-Guide.pdf
16. Alotaibi, M.B.: Determinants of mobile service acceptance in Saudi Arabia: a revised UTAUT model. Int. J. E-Services Mob. Appl. **5**(3), 43–61 (2013). doi:10.4018/jesma.2013070103 http://dx.doi.org/10.4018/jesma.2013070103
17. MOE: Universities Statistics. http://he.moe.gov.sa/AR/MINISTRY/DEPUTY-MINISTRY-FOR-PLANNING-AND-INFORMATION-AFFAIRS/HESC/UNIVERSITIES-STATISTICS/Pages/default.aspx
18. MOHE: Saudi Arabian Universities. http://mohe.gov.sa/en/Ministry/General-administration-for-Public-relations/BooksList/book8eng.pdf
19. CITC: ICT Indicators Report, End of Q2 2014. http://www.citc.gov.sa/English/Report-sandstudies/Indicators/Indicators%20of%20Communications%20and%20Information%20Techn/ICT%20Indicators%202014%20-%20Q2%20-%20Analysis%20Report_Final.pdf