

Need Analysis for the Development of Mobile App Glossary of Terms in Islamic Banking and Finance

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Abstract

Newer development in mobile technology allows the use of hand phone which can be extended not only to communication but also to other personal life styles such as digital references in a form of dictionary or encyclopaedia, to the users for just in time, just enough, and just for me access of information. One of the areas that received vast attention nowadays by educationists and learners alike is the area of Islamic banking and finance. The expansion of Islamic banking practices through various local financial institutions leads to the need in understanding the terminologies used in the industry in “just-in-time” manner due to the dynamism of the field itself. In view of this scenario, the present research seeks to shed some light using a workable model for developing a purposeful mobile Islamic banking terminology glossary app in a more convenient way and made it operational via devices such as iPhone, iPad or any Android-based smart gadgets. It further explored the prototype development and its implementations for mobile accessibility by providing multilingual glossary of Islamic banking and finance terminologies (Malay-Arabic-English). The translation of specific terms from any academic field needs collaboration between experts both from the language and subject domains. This paper reports the findings of the need analysis stage, inclusive of mapping users’ device type, Internet accessibility, reasons for owning mobile devices, delivery and user interface, and preferred features to be embedded in the mobile app.

Key Words: mobile app, mobile learning, Islamic Banking, Islamic Finance, instructional design model

1. Introduction

Islamic finance has grown tremendously since its emergence in the 1970's. Current global Islamic banking assets and assets under management have reached more than USD1 trillion.

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There are over 300 Islamic financial institutions worldwide across 75 countries. The Islamic Banking Act 1983 enabled the country's first Islamic Bank to be established and thereafter, with the liberalisation of the Islamic financial system, more Islamic financial institutions have been established. Malaysia's long track record of building a successful domestic Islamic financial industry of over 30 years gives the country a solid foundation and stability that adds to the richness, diversity and maturity of the financial system (McKinsey, 2008).

Today, Malaysia's Islamic finance continues to grow rapidly with assets reached USD65.6 billion with an average growth rate of 18-20% annually. The present ecosystem is supported by a conducive environment that is renowned for continuous product innovation, a diversity of financial institutions from across the world, a broad range of innovative Islamic investment instruments, a comprehensive financial infrastructure and adopting global regulatory and legal best practices. Malaysia has also placed a strong emphasis on human capital development alongside the development of the Islamic financial industry to ensure the availability of Islamic finance talent. All of these value propositions have transformed Malaysia into one of the most developed Islamic banking markets in the world (McKinsey, 2008). Moreover, policies and regulations that guarded the practices of Islamic banking and finance are equally important. These policies and regulation will ensure that the practices are complied with and endorsed accordingly by the Shariah advisory board of the related financial institutions.

The concept of Islamic banking includes many terms that originated from the study of Muamalat or transactions in Islam. Those terms are originated from Arabic language and have evolved in the field inducing a very particular definition and meaning. In relation to works on glossary terms in this field, there are very limited if not comprehensive in nature. Some may focus on bilingual terms used in Islamic banking, such as *Kamus Kewangan Islam* (Abd. Ghafar Ismail et al., 2011). Others may choose areas rather border in spectrum and scope. Nevertheless, a reference focusing on the trilingual version of the terms is none to be found. Thus, this is what intended to be endeavored in the current study. Let alone a specific mobile app to cater in offering this service in “just-in-time” manner to the end users. This subject is also considered to be a matter of concern in the field of language teaching and learning especially for students acquiring languages such as, Arabic or English for specific purposes (Islamic banking and finance).

2. Learning via Mobile Technology

The notion of mobile learning as similar to other technology-based learning facilities can be tracked back theoretically to various learning frameworks include behaviourist (Skinner, 1968), constructivist (Bruner, 1966), situated (Brown, Collins & Duguid, 1989), collaborative (Vygotsky, 1978), informal and lifelong (Eraut, 2000), and the use of it for providing teaching and learning support. The term mobile learning can be defined as any sort of learning that happens when the learner is not at a fixed, predetermined location, or learning that happens when the learner takes advantage of the learning opportunities offered by mobile technologies (MLearning, December 2010). Hwang and Tsai (2011) state the similar when implying the definition of mobile learning to the facilitating and promoting of learning anywhere and at any time via mobile technologies. Ally (2009), on the other hand, defines mobile learning as the delivery of learning content to mobile devices. The essential understanding of this definition might be rooted back to Wexler et al. (2007) where it was denoted to “any activity that allow individuals to be more productive when consuming, interacting with, or creating information, mediated through a compact digital portable device that the individual carries on a regular basis, has reliable connectivity, and fits in a pocket or purse”. In a nutshell, the aforementioned interpretations of mobile learning highlight one way or the other the crucial role of mobile learning in promoting learning anywhere and at any time. Additionally, there are many evidences supporting the effectiveness of mobile technology in a wide range of activities for learners of all levels of education (Thornton & Houser, 2004; Collella, 2000; Proctor & Burton, 2003; Colley & Stead 2003).

3. Problem Statement

The expansion of Islamic banking practices through various local financial institutions leads to the need in understanding the terms in “just-in-time” manner due to the dynamism of the field itself. Technology, on the other hand, is ubiquitous nowadays in our houses, dominating school children, and expanding across our professional lives. Mobile phones, iPads, tablets, laptops and many other technology devices have a great impact on educating the community. These devices can be used as an alternative to traditional reading references, such as, guidebook or dictionary that could promote learning and reading comprehension strategies with full features of mobility and flexibility. The motivating factor behind this project is the need to have a mobile access to Islamic banking terminologies in supporting learning environment. At the moment, the utilisation of mobile gadgets among the educators, students, and even professionals at various sectors is exponentially increasing and certainly aggregating the years to come.

Mobile accessibility, in this respect, is a must or else the potential use of technology could not be made beneficial especially when it comes to academic and education – the two areas which are always being neglected by the modernity and technology (Carroll, 1991). With the increasing rapid use of mobile devices (iPhone, iPad, iPod, and Android-based smartphones), the journey to venture in this area is favourable and very much promising. Viewing this scenario, this study attempts to develop a prototype of a mobile app for glossary of terms in Islamic banking and finance to serve the needs of academics and professionals.

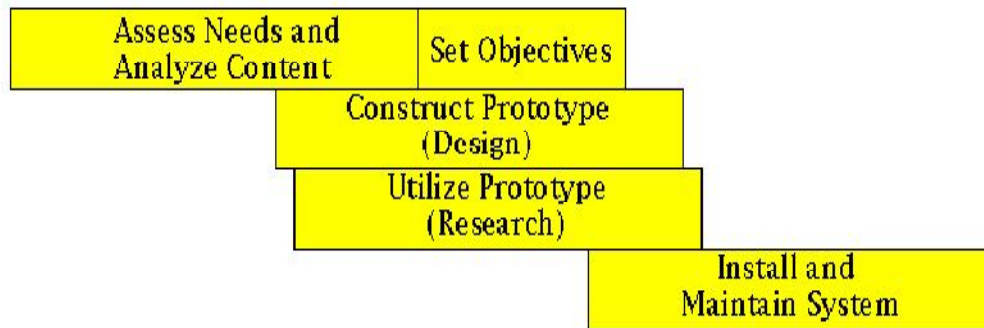
At the moment, mobile glossary of terms in Islamic banking and finance is not yet available in the mobile market (Apple and Android apps stores). Some of the mobile applications available in the market (iTunes and Google Play) with the similar intended functionality unfortunately cater for English-only based dictionary, such as *Financial Glossary* app (USD3.99) and *Financial Terms* (USD2.99).

4. Research Objectives

The main objective of this study is to embark on developing a mobile application for glossary term of Islamic banking and finance for the target community of academics and professionals using the step-by-step George's instructional design model (2000). This endeavor entails executing the objectives in stages as stated below:

- a) Access needs and content – analysing the needs of the development and what is the nature of the content in details
- b) Set objectives - detailing out the objectives from the development and how teach of the objectives can be achieved in this research
- c) Design – constructing a prototype through programming, debugging, sketching storyboards and designing accurate user interface.
- e) Research – utilising the prototype and performing continuous evaluation.
- f) System installation and maintenance - installing the prototype through proper channel, in this respect would be putting the application into the Apple store and Google Play store for commercial purposes.

Figure 1: Rapid Prototype ID Model (Tripp, S., & Bichelmeyer, B., 1990)



The model (as illustrated in Figure 1) allows a better communication between the designer and users right from the beginning. The feedbacks given by the users can be implemented at the earlier stage of the development of any prototypes. This non-linear approach gives more flexibility as well in detecting any drawbacks and defects existed in the development stages. It is, however, cautioned that this model is to be applied only in situations where time and costs are crucial factors (Tripp, S., & Bichelmeyer, B., 1990)

4.1 Need Analysis

The quantitative data collection procedures were conducted during the period of this research. A sample of 225 learned respondents where majority of them coming from the field of Education and Social Sciences (95.1%) followed by Sciences and Health Sciences (2.7%) and ICT and Engineering (1.8%) participated. The breakdown of their educational backgrounds is as follow: Diploma (3.1%), Bachelor (89.4%), Master (4.9%), and PhD (2.7%).

4.1.1 Device Ownership

The survey results (see Table 1) indicated that 159 out of 225 respondents (70.4%) had Android based device for their mobile phones followed by others (19%), Apple iPhone (11.1%), and Windows Phone (2.2%). The least was Blackberry mobile phone with a percentage of (1.3%) only. The factors that led to the high ownership rate of Android based mobile phones can be attributed to the cheap and competitive price of these devices in the market. However, in lieu of this finding, the simplicity, reliability and functionality may be best attributed to others, such as, Apple iPhone or Windows Phone.

Table 1:Ownership of Device Type

Device Type	Percentage (%)
Android	70.4%
Others	19.0%
Apple iOS	11.1%
Windows Phone	2.2%
Blackberry	1.3%

4.1.2 Internet Accessibility

Findings as stated in Table 2 on the most popular method to have an access to the Internet was through University Wifi facility (84.5%). The rest of the breakdown of percentages for Internet accessibility is as follows: Broadband 3G/LTE (37.6%), Free Hotspots (18.1%), High-speed Broadband (11.1%), Streamyx (8.8%) and Others (8.4%). Since most of the respondents were from the field of Education and Social Sciences, this is the possible explanation why University Wifi was chosen to be as the main preferred facility. This is balanced by Broadband 3G/LTE services with almost 40% of the respondents subscribed to them indicating that the Internet can be reached more than just the campus limited area.

Table 2: Internet accessibility

Internet accessibility	Percentage (%)
University Wifi	84.5%
Broadband (3G/LTE)	37.6%
Free Hotspots	18.1%
High-speed Broadband	11.1%
Streamyx	8.8%
Others	8.4%

4.1.3 Reasons for Having Mobile Devices

The respondents were asked on the reasons for having a mobile device. Table 3 tabulates the results with the majority of them (92.9%) stated Communication as the main reason. This was followed by Education (85.4%) and Entertainment (71.7%).

Collaboration and Business reasons received lower adoption with only 23.5% and 16.4% respectively. Since the selection of the respondents vastly came from the field of Education and Social Sciences as stated earlier, the findings disclose some insights of academic community in the study. It is noticeably clear from the findings that not only academic related matters (Education=85.4%) entice them to own a mobile device but some joyful activities might do as well (Entertainment=71.7%). However, surprisingly collaboration as the core activity in teaching and learning received less than normal with (23.5%) only.

Table 3: Reasons for having mobile devices

Reasons	Percentage (%)
Communication	92.9%
Education	85.4%
Entertainment	71.7%
Collaboration	23.5%
Business	16.4%
Others	0.9%

4.1.4 Delivery and User Interface

The respondents were also asked to select their preferences on elements used for the delivery of the app and its user interface design. These include the form of the app, the navigation of content, the main menu design, the delivery platform, and the language interface. Table 4 illustrates the findings on these aspects in details. Apparently, the combination of non web-based and web-based app (hybrid) was preferable by the respondents. This might refer to the fact that non web-based app is comparably faster in execution while at the same time any update if exist can be made seamlessly through limited online button click. As for the navigation, scrolling up and down using finger touch was rated highest which again might refer to the speed factor and the factor of responsiveness.

The main menu was preferable to be in a combination of both icons and their descriptions. Though the limitation of the mobile screen size may have hindered this preference, an app with fewer items may be considered for the development. Furthermore, the delivery was opted to be on both phone and tablet platforms. Although having on both platforms may give advantages to users, the limitation of resources would obstruct it from becoming a reality. As for the current study, the development of the app is for mobile phone platform rather than tablet. Finally, the language interface of preference was English.

Giving the fact that English interface is familiar to the users in almost the majority of apps available nowadays, the phenomenon is also true in this finding.

Table 4: Delivery and interface preferences

Interface preferences	Types of App	Percentage (%)
I prefer to have the app in a form of	Hybrid (combination of both)	63.3%
	Non web-based app	9.7%
	Web-based app	27.0%
I prefer the navigation of the content app using	Page flipping	27.9%
	Previous and next buttons	11.5%
	Scroll up and down	60.6%
I prefer the Main Menu in a form of	Both	69.9%
	List of icons only	24.8%
	List of words only	5.3%
I prefer to have the app designed for	Both	67.3%
	Mobile phone	29.6%
	Tablet	3.1%
I prefer the language interface in	Arabic	18.1%
	English	76.5%
	Malay	5.3%

4.1.5 Preferable Features

Table 5 shows the features rated by the respondents in descending order. The highest requested feature was search functionality due to this is the core function in any apps with dictionary like category. Next, the features received above 95% rating from the respondents were literal meaning of the term (97.8%) followed by settings section (97.3%). Features of trilingual form (English-Arabic-Malay) (96.9%) and terms arranged alphabetically received similar percentage of rating with (96.9%) each. This was tailed by Arabic transliteration of the term, word properties of the term, and list of related terms with (96%) each. Later followed by Arabic script of the term and view search history with (95.2%) and (95.1%) respectively. Noticeably in these selected features that the respondents need flexibility in using the app by being able to customise several settings incorporated in it. This message is obvious as settings section rated in third position from the list with 97.3%.

Table 5: Preferable features of the app

Preferable features	Percentage (%)
Search functionality	99.1%
Literal meaning of the term	97.8%
Settings section for changing the app appearance	97.3%
Trilingual form (English-Arabic-Malay)	96.9%
Terms arranged alphabetically	96.9%
Arabic transliteration of the term	96.0%
Word properties of the term (noun, adjective, verb, etc.)	96.0%
List of related terms	96.0%
Arabic script of the term	95.2%
View search history	95.1%
Add bookmarks	94.7%
Audio pronunciation of the term	92.9%
Custom list of terms	92.5%
Extended meaning of the term	92.0%
Terms arranged topically	91.1%
Share term definition via social networks (Twitter, Facebook, etc.)	88.1%
Share term definition via email	83.7%

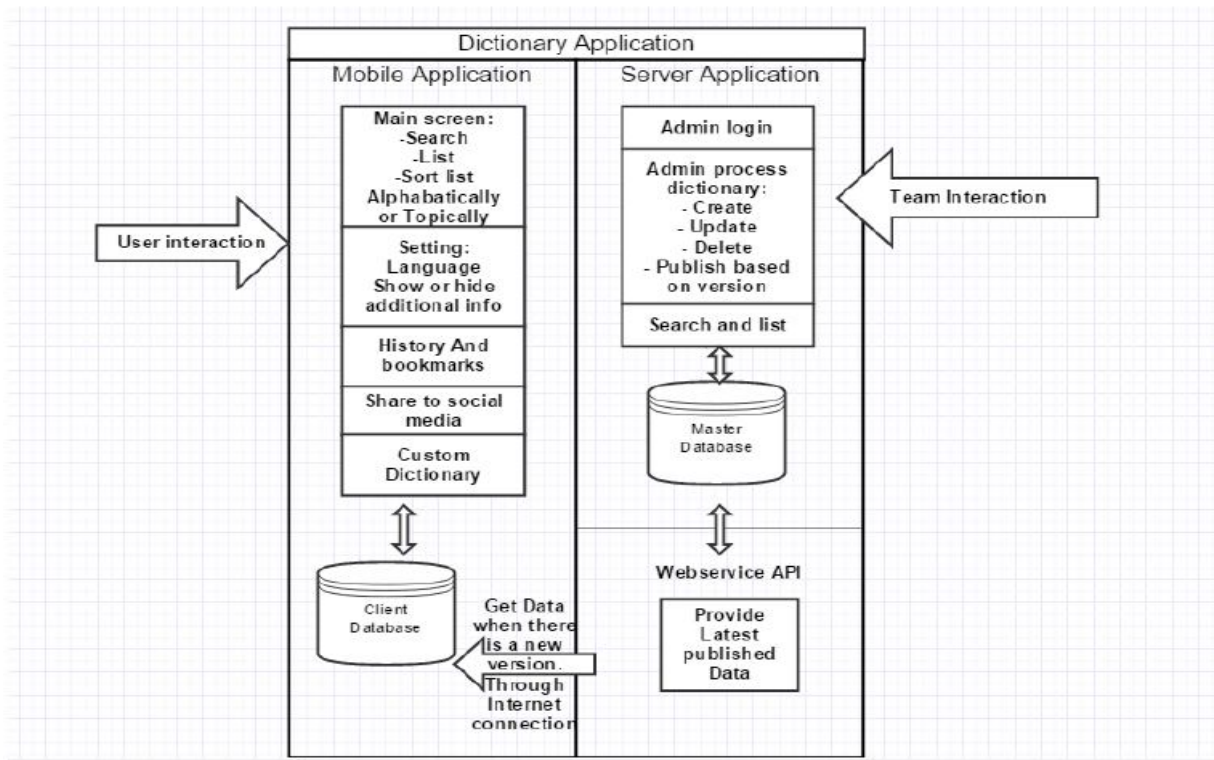
5. Design and Development Process

Islamic Banking and Finance (IBF) Dictionary was inspired circa 2014 in view of its importance towards the development of IBF industry not only in Malaysia, but in all countries in the world. Instead of having a printed version, it has an electronic version – a mobile application for Android and Mac users, called IBF Terms. IBF Terms is a continuation from the printed version of IBF Dictionary. The purpose of this mobile app is to provide an easy mean for IBF practitioners, academicians and students to make use of their mobile phones to learn and explore IBF in depth, as well as to facilitate a better understanding towards IBF principles, techniques and applications.

a) Development

This mobile dictionary comprises of two components: web server and mobile application. Web server houses all data and information, while mobile application serves as a platform to present such data and information stored in and retrieved from the web server. For an easier understanding, all data and information available in the mobile app came from the web server. Both are interdependent.

Otherwise, this mobile dictionary would not be a reality. 5 types of technology are used for the purpose of establishing, managing and maintaining both web server and mobile application.



b) Development map

Ruby on Rails, PostgreSQL and JavaScript are used in the web server. Ruby on Rails provides default structures for a database, a web service and web pages; PostgreSQL stores data securely; while JavaScript creates interactive pictures on applications and web pages through its own language. These 3 types of technology enable the developer to establish and exercise numerous roles – terms listing, terms searching, authentication, term management, document uploading and document processing.

At the other side, Ionic and SQLite are used in the mobile application. Ionic serves as an open-source software development kit; while SQLite serves as a database engine. Both types of technology allow the developer to not only list and search terms, but also to bookmark them and insert custom terms.

c) Development team

The development of this mobile dictionary was made possible by Namlite Sdn. Bhd. led by Abi Dzar Jaafar. At the initiation of this project, the Company outlines numerous project objectives. The purpose of this project is to: (i) convert the data collected in the electronic database format for inclusion to the mobile application; (ii) design and develop a workable mobile application for this purpose; (iii) design and develop interactive tools integrated with the mobile application; and (iv) perform formative and summative evaluation on the procedures as stated previously.

d) Execution phases

The Company initiated the project in June 2015 and underwent 7 phases of execution. The *first phase* was requirement and design, and system architecture. At this phase, the developer prepared a guideline called the User Requirement Specification, and design and architect the ecosystem between client and server.

The *second phase* was web application service running for data entry. At this time, the developer designed and developed a server for the purpose of storing the current updated version of the database to be used in the application and, at the same time, a server interface for the purpose of updating and displaying the database of terms in the application.

Phases 3 and 4 are phases for mobile application development. The developer underwent both phases to establish features in mobile application. They are: (i) searching, displaying, bookmarking and sharing the terms; (ii) customisation of settings; (iii) displaying of terms alphabetically and topically; (iv) viewing of the search history; and (v) establishment of seamless and user-friendly mobile interface. Only platform differentiates both phases: the first one was for Android; while the second one was for iOS platform.

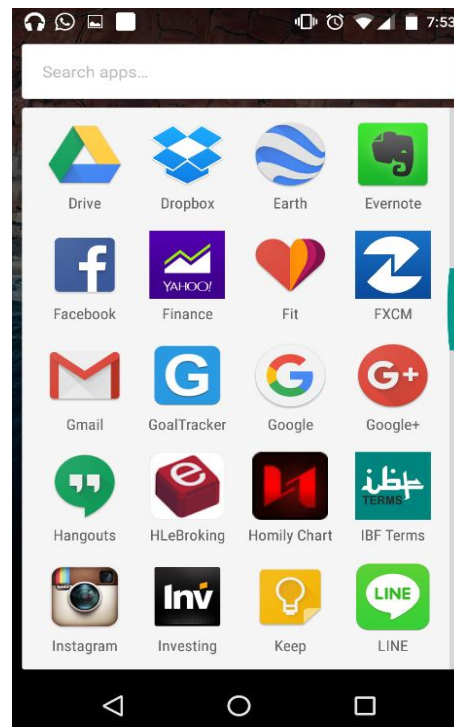
Phase 5 was the continuation of Phase 2, where the developer designed and developed a server for storing the current updated version of the database to be used in the app. At this stage, the developer ensured the speed performance of the website backbone of the database is acceptable and in line with the common standard.

Phase 6 followed Phase 4. At this stage, a mobile interface for adding, updating and displaying custom list of terms was made available in the application. At the same stage, the developer continued building the application for iOS users.

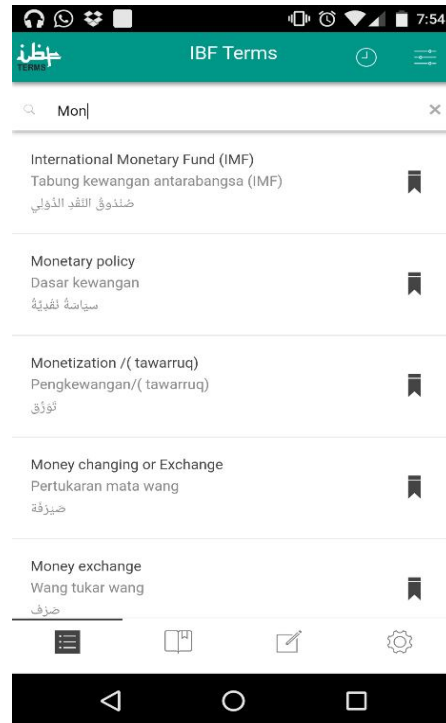
Phase 7, taking place tentatively in June 2016, was for evaluation and deployment. At the final stage of the execution, the developer made a quality assurance exercise by performing formative and summative assessment. The application is, then, due for deployment to market place in both Google Play and Apple Marketplace for the use of end-users.

e) Features

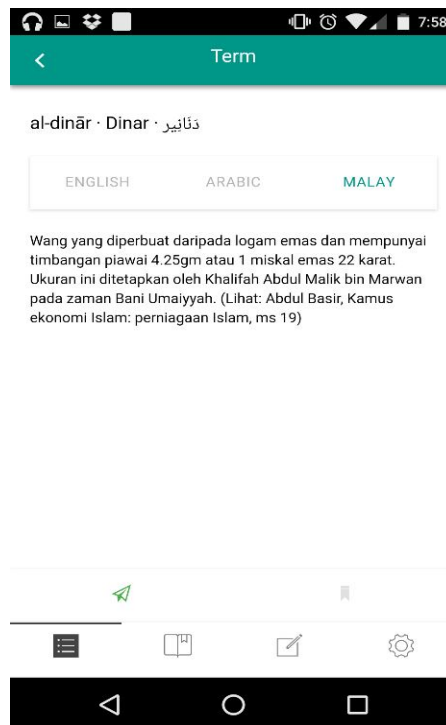
At the end of this project, end-users are expected to download the application through the mobile applications market (i.e. Google Play) and enjoy numerous features; not only searching and viewing terms in short or in detail, but also addition and deletion of custom terms for personal reference. The terms may, even, be shared to other social medias, especially WhatsApp and Facebook.

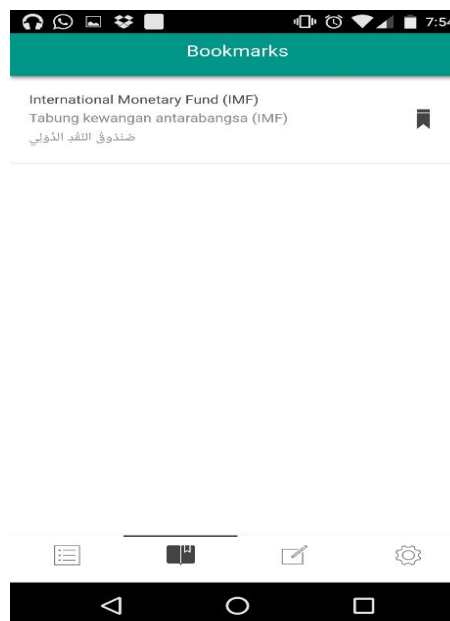


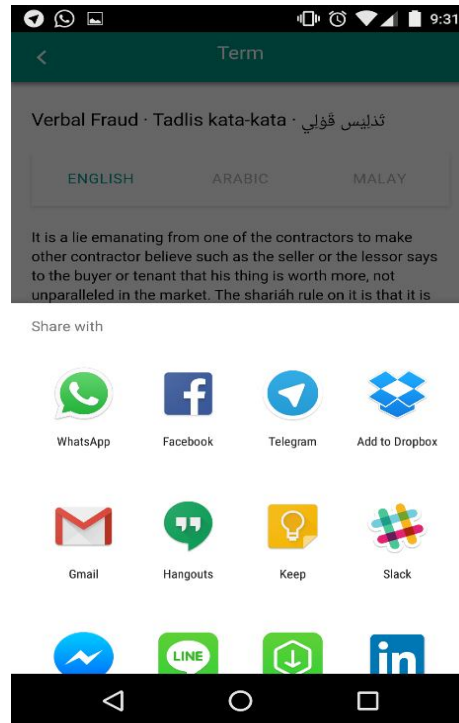
Application icon, as shown in the menu



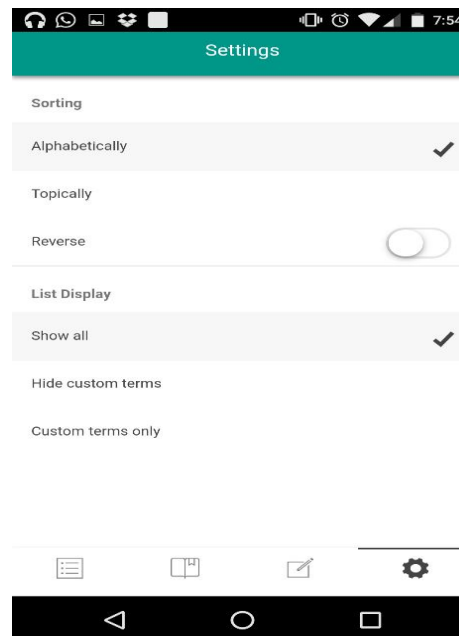
Start screen



Definition of a term shown in Bahasa Melayu*Definition of a term shown in its original language (Arabic)**Bookmarking a term*



Sharing a term and its definition to social medias



Settings

6. Discussions of Design and Development

The need to build a bridge between technological innovations and users' satisfaction is important to ensure the use of the tool could trigger learning attainment, engagement, and motivation (Muhammad Sabri Sahrir & Nor Aziah Alias, 2011; Kinzie et al., 2002; Lee, 2012). In the present study the learners shared their information on device type, Internet accessibility, and reasons for owning a mobile device. They also conveyed their preferences on the delivery platform, user interface, and requested features of the intended app, glossary of terms in Islamic banking and finance. The study suggests that the app can be later developed taking into account these findings to enhance its practicality and embrace by the academics and professionals at large.

The step-by-step development of mobile glossary of terms in Islamic banking and finance will employ the findings of the current study. Elements in aspects stated earlier which received higher rating from the respondents will be emphasised and put into consideration during the development. This includes the app of a hybrid type, navigation using scroll up and down, use of icons for the main menu, and the English interface. Although mobile web apps can be advantageous to the user compared to normal mobile app (Jenson, 2011), the findings in this study suggest the combination of both as an opted preference. This is not only for the preference per se, but well supported by the results in the Internet accessibility where users may face difficulties to get the connection outside of the university territory as the number of subscribers to Broadband 3G/LTE is less than 40%. It is anticipated that the designated mobile app will not only be characterised as a user-friendly but can also provide a spectrum of experiences to the users particularly those interested in Arabic representations of the terms.

Prior to the mobile app features, it is also wise to note here that the developed app will be supported on both platforms; iPhone and Android. It will serve on Android platform due to its popularity and be made available on iPhone device for its reputation in the field of education (Chen, 2009) and executive professionalism (Edwards, 2014). The content of the mobile app is multilingual in nature where it is supposed to cater the display of both Latin and non-Latin characters especially Arabic. Elements of the content include literal meaning of the terms in trilingual form (English-Arabic-Malay), Arabic transliteration, word properties, and Arabic script of the term. On top of that, the capability of customising the app display is a feature that received higher request from the respondents.

Other customisations like disclosing and closing some information of the term during the navigation, changing the language user interface, font type and size, and reading mode can be considered to be integrated during the development.

7. Conclusion

The workable mobile app for glossary of terms on Islamic banking and finance is pertinent to academics and professionals alike. The lack of such tool used in mobile oriented environment justifies its development. In fact, users' needs and preferences are being taken account during the development of the mobile app. The app could be utilised to engage users in improving their knowledge on Islamic banking and finance. This is because not only the integrated features are those preferred and suggested by them but the overall interface itself that makes it likely unique from any other mobile apps available in the field. Hopefully it would contribute to a significant input in disseminating the intended information not only in an efficient and effective way but also engaging and enjoyable to the users.

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References

- Ally, M. (Ed.) (2009). *Mobile learning: Transforming the delivery of education and training*. Edmonton, Canada: Athabasca University Press.
- Brown, J.S., Collins, A. & Duguid, S. (1989). *Situated cognition and the culture*
- Bruner, J (1966). *Toward a Theory of Instruction*. Cambridge, MA: Harvar
- Carroll, J. M. (Ed.) (1991). *Designing Interaction: Psychology at the Human-Computer Interface*, Cambridge: Cambridge University Press.
- Chen, B. X. (2009, August). *How the iPhone could reboot education*. Retrieved from <http://www.wired.com/2009/12/iphone-university-abilene/>
- Colley, J & Stead, G (2003). *Take a bite: producing accessible learning materials for mobile devices*. Proceedings of MLEARN 2003: Learning with Mobile Devices. London, UK: Learning and Skills Development Agency, pp. 43-46
- Edwards, J. (2014, April). These maps show that Android is for poor people. Retrieved from <http://www.businessinsider.my/android-is-for-poor-people-maps-2014-4/>
- Eraut, M. (2000). *Non-formal learning, implicit learning and tacit knowledge in professional work: The Necessity of Informal Learning*. F Coffield. Bristol: The Policy Press

- George, M.P. (2000). *Rapid Instructional Design: Learning ID Fast and Right*. San Francisco: Jossey
- Guenther, S., Winkler, T., Ilgner, K. & Herczeg, M. (2008). Mobile Learning with Moles: A Case Study for Enriching Cognitive Learning by Collaborative Learning in Real World Contexts. In *Proceedings of World Conference on Educational Multimedia, Hypermedia and Telecommunications 2008* (pp. 374-380). Chesapeake, VA: AACE.
- Hwang, G. & Tsai, C. (2011). Research trends in mobile and ubiquitous learning: a review of publications in selected journals from 2001 to 2010, *British Journal of Educational Technology*, 42 (4), pp. 65-70.
- Jenson, Y. (2011, October). *Mobile apps must die*. Retrieved from <http://jenson.org/mobile-apps-must-die/>
- Abd. Ghafar Ismail, Sanep Ahmad, & Jaafar Ahmad (2011). *Kamus Kewangan Islam*. Kuala Lumpur: Dewan Bahasa dan Pustaka.
- Kinzie, M.B. et al. (2002). A user-centered model for web site design: needs assessment, user interface design, and rapid prototyping, *Journal of the American Medical Informatics Association*, 9 (4), pp. 320-330
- Lee, J. (2012). Adaptive courseware using Kolb's learning styles, *International Magazine on Advances in Computer Science and Telecommunications (IMACST)*, 3 (1), pp. 45-59
- McKinsey (2008). *The World Islamic Banking Competitiveness Report 2007-08*, Manama, Bahrain: McKinsey & co.
- Muhammad Sabri Sahrir & Nor Aziah Alias (2011). A study on Malaysian language learners' perception towards learning Arabic via online games, *GEMA Online Journal of Language Studies*, 11 (3), pp. 129-145.
- Proctor, N & Burton, J (2003). *Tate Modern multimedia tour pilots 2002-2003*. Proceedings of MLEARN 2003: Learning with Mobile Devices. London, UK: LSDA, pp. 127-130
- Skinner, BF (1968). *The Technology of Teaching*. New York: Appleton-Century-Crofts
- Thornton, P & Houser, C (2004). *Using mobile phones in education*. Proceedings of the 2nd International Workshop on Wireless and Mobile Technologies in Education. JungLi, Taiwan: IEEE Computer Society, pp. 3-10
- Tripp, S., & Bichelmeyer, B. (1990). Rapid prototyping: An alternative instructional design strategy. *Educational Technology Research & Development*, 38(1), 31-44.
- Vygotsky, LS (1978). *Mind in Society: the Development of Higher Psychological Processes*. Edited Cambridge Mass, London: Harvard University Press
- Wexler, S., Schlenker, B., Brown, J., Metcalf, D., Quinn, C., Thor, E., Van Barneveld, A., & Wagner, E. (2007). *Mobile Learning: What it is, why it matters, and how to incorporate it into your learning strategy*. In Santa RosaCA: eLearning Guild.