# THE PRACTICE OF MOBILE AUGMENTED REALITY IN ENHANCING ACCESSIBILITY OF LIBRARY MATERIAL

Nor Atika Ahamed Kamal
*Faculty of Information Management,*
*Universiti Teknologi MARA (UiTM)*
*Puncak Perdana Campus,*
*UiTM Selangor, Malaysia*

## Abstract
Library is one of the educational centers to enhance knowledge. Variety of mode in communication have been used to delivering an information toward library patron. The advent of technology bring to the usage of mobile technology in library. Therefore, this research focus on the practice of Mobile Augmented Reality in accessing library material. A part from that, it is also aim to determine the usability and define the best factor influence usage of MAR and also describe on the practice of MAR among libraries today and how Malaysia libraries can use this as one of the technique to unsure the increasing of library user from time to time.
**Keywords:** Mobile Augmented Reallity, Augmented Reality, Technology, library, library user.

## INTRODUCTION

Peoples who attended the library has their own agendas, objectives and create their own meaning in library. Libraries is defines as a collection of resources in a many formats that is organized by a librarian or other people in this field who giving convenient physical, digital, bibliographic, or intellectual access and show the targeted services and programs with the objective of educating, informing, or entertaining a variety of audiences and the goal of changing individual learning and advancing society as a whole (Eberhart, 2010). Advent of technology changes the way of libraries being operated. Besides that, wireless technology, and extended respectively on mobile phones, are becoming pervasive in new era community and according to the Pew Internet & American Life Project reports, 85% of American adults own a mobile phone. Presently, Internet-enabled mobile devices are use to match a community need for getting the information and recreation things (Rodriguez & Rivero,2016).

There are so many type of technology that can being implemented in our libraries one of them is Mobile Augmented Reality. This technology can be prescribed as a technology that bringing together the virtual environment and the real world. With this kind of technology, the true situations seen by individual eyes is mixed with the virtual information showed and then the eyes can see more various world (Huang et al.,2016). Others also describe the augmented reality as real object image that had been superimposed via computer generated virtual information. It is a live view that generated input such as video, sound, images, graphics or even GPS data. (Sungkur, Panchoo & Bhoyroo,2016).The primary goal this research is to know how technology of Augmented Reality being applied in libraries.

## ISSUES

In this paper, several issues are discussed regarding on how the practice of Mobile Augmented Reality in accessing library material. Based on my observation from the research articles, there is some limitations may occur in library searching technique which is:

- Stereotype library perception
- Gen Y are not interested with library
- Dramatic change of technology

## RESEARCH OBJECTIVES

The objective of this research is to evaluate the practice of Mobile Augmented Reality in accessing library material. There some element of sub-objectives was listed:

- To know whether the design of Mobile Augmented Reality can help in delivering an information to library user.
- To identify the usability of Mobile Augmented Reality in delivering an information to library user.
- To determine the factors influences towards the usage of Mobile Augmented Reality.

## RESEARCH QUESTIONS

These research questions have been considered in order to guide this study:

- How the design of Mobile Augmented Reality can help in delivering information to Library users?
- What is the usability of Mobile Augmented Reality delivering information to Library users?
- What is the factors influence towards the usage of Mobile Augmented Reality?

## LITERATURE REVIEW AND PROPOSED FRAMEWORK

In 20$^{th}$ century, Library outline changed continuously through the year and all the more significantly with technology and new innovation. Today's libraries are turning out to be exuberant group social that more focuses on incorporate workmanship like galleries, adaptable assembly halls, meeting and gathering rooms, media lounges, and even a cafe (Gisolfi, 2010). Therefore the searching technique of library material also changes with the advance of technology of Mobile Augmented Reality.

To begin with the early implementation of augmented reality, few research had been done with a prototype one of them will be integrated *augmented reality aided assembly environment (IARAE).* This technology is actually to allow user to explore the interaction between real and virtual component so that user can get new experience in getting information (Wang, Ong & Nee, 2015). Other than that *Pervasive Augmented Reality* also had been implementing. This system actually a bit different from a conventional

AR, it giving user interaction on the physical environment with the digital format (Grubert et al., 2016). *Libagent for library management* is another augmented reality that had been implement. The implementation of this technology give the library an easy way on systematically manage and sorting all the material in searching task (Shatte, Holdsworth & Lee, 2013). Besides that, Some survey also had find out that the implementation of Augmented reality especially the QR code generator had making the user feel easy to utilize and would give a variety of library information only with their own portable devices in an interactive way (Lo, Coleman & Theiss, 2013).

Stetson University college of Law and Dolly and Homer Hand Law Library had come out with augmented reality application called *Stiktu.* By downloading this application user can scan to any material in library and link all the information about the material to Twitter and Facebook account not only that it will lead the user to explore the virtual graffiti from the material ( Barnes & Brammer, 2013). National University of Singapore have come out with research on *Augmented Reality design and assembly* (ARDnA) to be implement in their library. This technology give a coordinated approach for outline and get together arranging, instinctive what's more, reasonable association with virtual models and all encompassing get together assessment ( Ng et al., 2013).

From our research we also found some of the effectiveness of Mobile Augmented Reality especially in libraries. According to the Huang et al., (2016), AR route function incorporates the data of perusing ways, the genuine space areas, constant element data, book acquaintances and users remarks with help users have admittance to the point related books effectively. Moreover ,this technology has been conveyed to another measurement where the user can quickly picture what is going on and effortlessly comprehend complex ideas (Sungkur, Panchoo & Bhoyroo, 2016). Hence, the Mobile Augmented Reality also can bring the user into the library and give them a hands-on chance to investigate the library's material while keeping up a feeling of fun and oddity that passes on that library and staff are not in trend and antiquated ( Barnes & Brammer, 2013).

University of Manchester had come out with Augmented Reality project called as SCARLET (Special Collections using Augmented Reality to Enhance Learning and Teaching), this project had give augmented reality empowers understudies to encounter the best of two world and experience the technology in searching library material ( Armstrong, 2012). The effectiveness of using Mobile AR system can be in many forms, in this research one of the form that we can stated as an example is the QR Codes system. QR Code has seen a consistent development of business applications since the approach of intelligent and Web-fit portable gadgets (Xu, 2014).

Augmented reality innovation enhances the patron viewpoint and the association with this present reality and usually the applications apply the touch screen or gadgets catches as opposed to information gloves or 3D directing gadgets as a way of conventional Augmented reality setups ( Weng, Jubair & Bee, 2013). In any libraries giving the best services to the user is a vital role,the libraries itself must be equipped with a good facilities ( Shafie, Yatim & Othman, 2012).

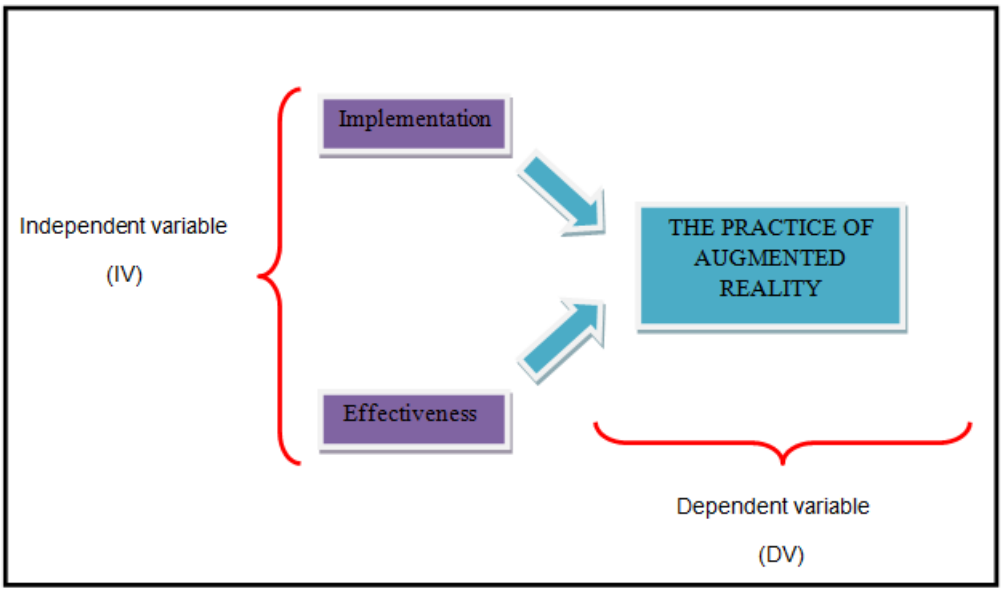


Figure 1: Proposed theoretical framework

This framework come out because from the past research many of the researcher are talking about this two factors when practicing Augmented Reality in library which is the implementation of the Mobile Augmented Reality in library and the effectiveness of the Mobile Augmented Reality in library. The two factors is independent variable and the practice of augmented reality is the dependent variable.

## CONCLUSIONS

To obtain many good perceptions towards library, the use of technology is crucial to look on. The use of Mobile Augmented Reality in accessing library material is one of the good initiatives that can be implementing by library towards user satisfaction. On top of that, it also can educate user using technology toward searching information.

## REFERENCES

Armstrong, G., Hodgson, J., Manista, F., & Ramirez, M. (2012). The SCARLET Project: Augmented Reality in special collections. *SCONUL Focus,* 54-57.

Barnes, E., & Brammer, R. M. (2013). Bringing Augmented Reality to the Academic Law Library. *AALL Spectrum*, 13-14.

Eberhart, G. M. (2010). *The librarian's book of lists*. Chicago: American Library Association.

Gisolfi, P. A. (2010). Public libraries in transition from 20th to 21st century models. *Advances in Library Administration and Organization,* 1-36.

Grubert, J., Langlotz, T., Zollmann, S., & Regenbrecht, H. (2016). Towards Pervasive Augmented Reality: Context-Awareness in Augmented Reality. *IEEE Transactions on Visualization and Computer Graphics,* 1-1.

Huang, T.-C, Shu, Y., Yeh, T., & Zeng, P. (2016). Get lost in the library? *The Electronic Library, 34*(1), 99-115.

Lo, L., Coleman, J., & Theiss, D. (2013). Putting QR codes to the test. *New Library World,114*(11/12), 459-477.

Ng, L. X, Wang, Z. B., Ong, S. K., & Nee, A. Y.C. (2013). Integrated product design and assembly planning in an augmented reality environment. *Assembly Automation, 33*(4), 345-359.

Rodríguez, R. A., & Rivero, M. O. (2016). Information skills training through mobile devices. *The Electronic Library, 34*(1), 116-131.

Sungkur, R. K., Panchoo, A., & Bhoyroo, N. K. (2016). Augmented reality, the future of contextual mobile learning. *Interactive Technology and Smart Education, 13*(2), 123-146.

Shatte, A., Holdsworth, J., & Lee, I. (2013). Context-Aware Mobile Augmented Reality for Library Management. *Lecture Notes in Computer Science PRIMA 2013: Principles and Practice of Multi-Agent Systems,* 510-517.

Shafie, Z., Yatim, N. H. M., & Othman, R. (2012). Environmental Friendly School Libraries as Excellence Resource Center in Creating Human Capital and Learned Malaysia Young Generation. *Procedia - Social and Behavioral Sciences, 68*, 222-231.

Wang, X., Ong, S. K, & Nee, A. Y. C. (2015). Real-virtual interaction in AR assembly simulation based on component contact handling strategy. *Assembly Automation, 35*(4), 376-394.

Weng,E.N. G., Jubair, M. A.-., & Bee, O. Y. (2013). Multimedia based Mobile AR System. *International Journal of Interactive Digital Media, 1*(2), 31-35.