# ZAKAT APPLICATION DEVELOPMENT: THE NEEDED FEATURE AND EVALUATION METHOD

**Anas Tawalbeh**
Faculty of Science and Technology
Fatoni University
*anas.tawalbeh@ftu.ac.th*

**Ibtisam Hama**
Faculty of Science and Technology
Fatoni University
*Ibtisam_alhamadi@ftu.ac.th*

**Abstract**
*Using technology became a daily routine for most people, especially with the four billion internet users worldwide. Since Islam is a way of life, technology have been utilized to create software's for daily life activities based on Islamic guidance including Zakat. The purpose of this study is to discuss the specific and detailed steps in system development life cycle (SDLC) to be followed in developing Zakat calculation applications including functional requirements of such applications, as well as suggest an evaluation method for the software usefulness, and ease to use based on previous studies.*

**Keywords:** SDLC, zakat calculator, web application, smartphone application, functional requirements, Quality assessment.

## 1. Introduction

There is no doubt that the technology has become an inevitable part of muslims life and constantly evolving at a rapid rate. Smartphones and tablets have been among the tools that brought about the increase rate in the usage of technology in which many Muslims are having, these tools have helped in a variety of Islamic aspects. The growing number of Islamic applications including android and iOS applications brings challenges associated with the software requirements and the user interface design. High quality applications need to be developed to match the users' needs, perform efficiently and are safe to use. The involvement of technology to deliver systems to serve muslims is not denied, it is seen that systems for Prayer direction, Halal food restaurants and zakat are widely used (Hakim, Mulazid, & Meiria, 2018). System development life cycle (SDLC) is followed when developing an application, with its various models each organization is able to select what suits its environment or come up with their own model (Dennis, Wixom, & Tegarden, 2015). This work aims to study the technology utilization to calculate zakat considering the users' needs. By studying the needed functional requirements and the evaluating method for Zakat application it would be easier to develop a useful and easy to use application in future works.

The first section of this article introduces the topic, followed by related work to Event Information System, the third section discuss the waterfall model of the Software Development Lifecycle methodology, requirements analysis is presented after that, followed by the fifth section which is about the implementation, the sixth section discusses the system quality assessment, findings are presented in the seventh section and the last section is the conclusion.

## 2. Related Work

Zakat is the third pillar in Islam (Al-Bukhari, 2013), it is an annual donation given by the rich to the poor in the community, including the eight categories specified in Quran (Ali, 2011), which make it form the society and return to the society itself which strengthen the relation between societies. Several Muslim school of thoughts/Mazhab of Islam have mentioned three main goals of Zakat, these are social, religious and economics goals (Al-Utaibi, 1999). Zakat payment depends on the type of wealth, and there are 5 types of wealth to be purified by doing Zakat, i.e., donate part of it, these types of wealth include cash money, gold, silver, livestock, plantations and business & trade (Nadzri, Rahman, Rashidah & Omar, 2012).

A part form application for Muslims' daily life activities is Zakat application. It is a kind of application that is used to calculate Zakat and may provide additional services related to Zakat, such as using the application for paying Zakat with a button click. It is essential to follow the SDLC steps to develop such an application, and there are several steps included in the development, these steps are required to specify functions, type of users and scope of the system as well as implement and maintain the system, it all lasts from the initial until the final stage (Hakim, Mulazid, & Meiria, 2018). Furthermore, these steps or phases are classified into four fundamental phases in the SDLC methodology including planning, analysis, design, and implementation (Dennis, Wixom, & Tegarden, 2015). The initial phase of developing software is the planning phase, it considers why to build such a system and how to build it. Analysis is the second phase, and it is about who, when & where to use a system and highlight the system tasks. Thirdly is the design phase and it focuses on how the system will operate. Finally, is the implementation phase which consists of building the system. These phases are presented in Figure 1.
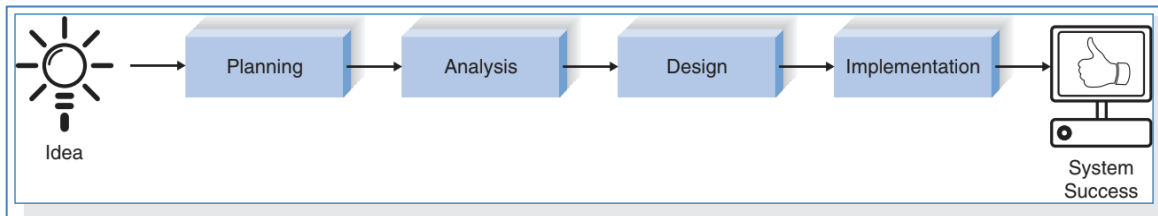


*Figure 1: Systems Development Life Cycle Phases*

Management Information System (MIS) is a program that runs on a personal computer or server, it provides end-user computing facilities, keeps data in databases, processes data and gives output in a variety of formats to different user types. MIS purpose is to meet the general information needs of all the managers in the organization. It helps users and managers or organizers to identify the needs and communicate (Bagad, 2009).

The platform that the application will be developed for is of a highly importance including native application platforms and the web. While the development of web applications is done once and it will run on different devices (Jobe, 2013), it is significant to understand the mobile operating system (OS) market. The connectivity using smartphone in increasing faster than the increasing of it using PC's (Perspectives & Report, 2020), besides, the global use of mobile devices has comparative statistics about the uses of several OSs by users. According to ("Mobile Operating System Market Share Worldwide | Statcounter Global Stats", 2021), Android owned 71.93% of the worldwide mobile operating system market share in 2020, while iOS took 27.47% as shown in figure 2. It is worthy to note that each country has its own statistics that may differ from other countries. These mobile devices include hardware specifications that enhance its performance, for

instance: Global Positioning System (GPS) which provides up-to-date data, at low-cost and usable (Korpilo, Virtanen, & Lehvävirta, 2017).
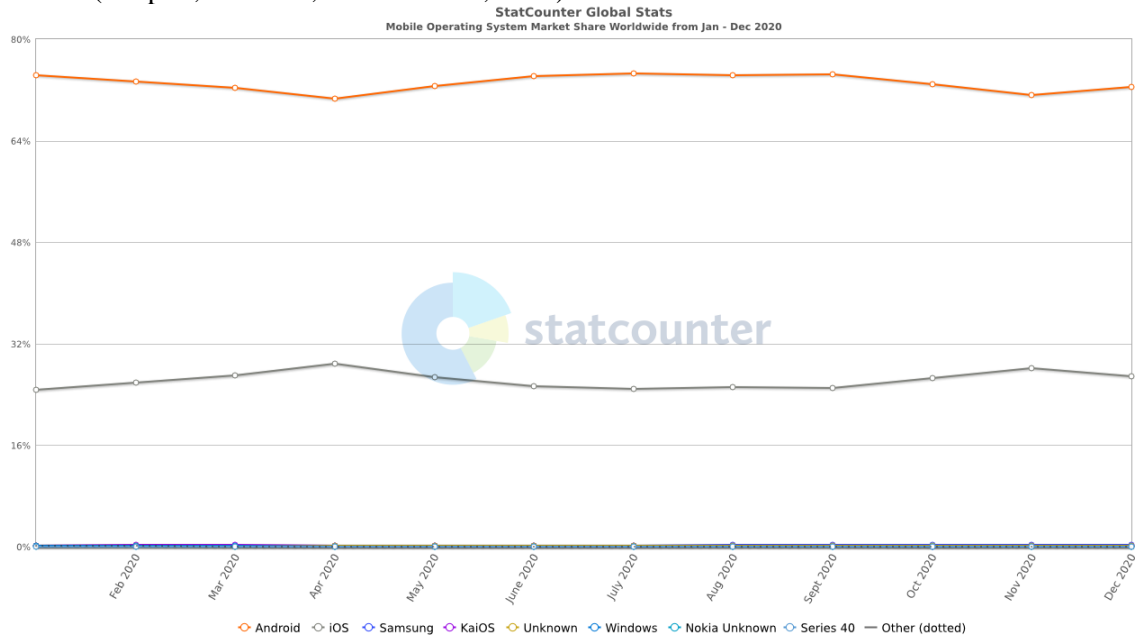


*Figure 2: Mobile Operating System market share in 2020*

The demand for Zakat applications has been on the rise in recent decades. Zakat application established upon the calculator of zakat, which minimally includes the calculation of Zakat of the cash money. A system developed for the web to calculate zakat; E-Zakat system, the system functions include information about zakat as in Fiqh (Islamic jurisprudence), Zakat Calculator, Reports, Mustahiq, Search and Log (Ahmad, Akhbariee, & Hafizuddeen, 2013). Regarding smartphone development, Zakat application user interface (UI) has been evaluated and thus a suggested improvement proposed by (Shabrina, Lestari, Iqbal, & Syaifullah, 2019). Financial studio, an application have been developed for financial calculation includes the calculation of Zakat for four types of wealth including gold, silver, cash, business and property (Asghar, Batool, Bibi, Ismail, & Zahra, 2016). Utilizing smartphone hardware within the Zakat application is helpful, specifically the use of GPS. in their study (Ahmad, Akhbariee, & Hafizuddeen, 2013), they utilized GPS to find the nearest Zakat collection office. Zakat could be calculated and paid using the application too, payment of Zakat using technology has been implemented and studied, for example the study conducted by (Utami, Suryanto, Nasor, & Ghofur, 2020).

Aside from academic work, the researcher found several Zakat calculators available for users on the web as well as on smartphones; those calculators have been there since quite some time, the first among them is available on Zakat.org website, it provides calculation service of Zakat, as well as it includes a feature for the calculation of Expected Tax refund as any donator can deduct from his committed government tax when donating. Secondly, the calculator developed by islamicfinder.org provides the calculation service too. However, the user needs to include the price of the gold or silver before starting the needed data input, as well as the calculation process go through all types of wealth before calculating the Zakat even if the user has only one type of wealth not all of it. In addition, Kitabisa is an application for Zakat calculation and payment work on Android, iOS and web. Though, it is scoped to work in Indonesia only. Similarly, there are applications functioning only in Malaysia such as: Tulus and Zakat selangor. Zakat Pro calculator is another application that runs on Android and iOS specifically. It provides services such as Zakat History, Zakat Reminder as well as a synchronization with Google accounts for the premium users

beside the feature for calculation of Zakat for different types of wealth including cash, gold & silver, estate, investment, agriculture and cattle, the data inserted, and the result are both in cash amount.

## 3. Quality assessment

Software quality assessment refers to the method that is followed to assess the software components and design based on the specified requirements to deliver quality software to the user (Pressman, 2005). Moustakis, Litos, Dalivigas, & Tsironis (2004) specifies nine standard criteria of website quality assessment: Relevance, Usefulness, Reliability, Specialization, Architecture, Navigability, Efficiency, Layout and Animation. Relevance related to visitor perception of the website, associated with visitor inquiry. Usefulness is related to the level of which the website has over other methods or technology. Reliability considers the information accuracy, while Specialization monitors the specificity of information provided. The architecture associated with object organization into the webpage. Navigation consists of surfing the website easily and conveniently. The technical performance characteristics of the website is Efficiency. Layout captures the uniqueness involved in website objects presentation. The animation is about user interaction. Although these criteria are valid for website assessment, it all gained different scores in its importance. Other researchers specify more robust factors that influence users' satisfaction, for instance, service interaction and usability showed to possess a positive and significant impact on users' satisfaction (Nadzri, Rahman, Rashidah & Omar, 2012). Besides, Usefulness of the website tested to be more considered as a quality assessment factor for the website (Tang, 2016). A recent study about using technology to pay Zakat found that, attitudes of users to use technology to pay Zakat can be expressed by perceived ease of use, perceived usefulness, and electronic word of mouth (eWOM) (Purwanto, Sulthon, & Wafirah, 2021). From the UX perspective, the look, the feel and the usability of the application in combination with the effectiveness, efficiency, understandability, ease of use, satisfaction, and desirability of the system have been used to introduce Zakat application in (Shabrina, Lestari, Iqbal, & Syaifullah, 2019).

## 4. Discussion

Zakat calculator enables users to know the amount of Zakat that must be paid simply by using his/her device through the web or a downloadable application. Such an application must allow the user to calculate the amount of Zakat for a specific type of wealth either in cash or in the same wealth type, e.g., cattle. The study's core objective is the investigation of the available work on developing and studying Zakat calculator applications.

Based on the review of published work and application on mobile stores, it has been discovered that there are several trials to develop Zakat applications, for both web and smartphone. In addition to the efforts to improve the UI were proposed (Shabrina, Lestari, Iqbal, & Syaifullah, 2019), all of the developed system include the essential part of Zakat application which is the calculation of Zakat for gold and silver, besides, some application provide calculation for each type of wealth separately, while another features have been presented in different systems such as Zakat information, using GPS to get to the nearest Zakat collection office, pay Zakat, log, search, reports and even the feature of Expected Tax refund (Hakim, Mulazid, & Meiria, 2018) [13] (Asghar, Batool, Bibi, Ismail, & Zahra, 2016) (Shabrina, Lestari, Iqbal, & Syaifullah, 2019) (Ahmad, Akhbariee, & Hafizuddeen, 2013). In other words, there is clear evidence that the development of the Zakat system is in continuous enhancement with more features added to the developed systems and it opens the way for more competition in the field. These kinds of competitions drag developers' attention to make a worthy effort to develop a better Zakat application to meet users' needs. Apart

from that, GPS could be further studied and investigated to figure out new ways to utilize it in Zakat applications. Aside from GPS, other hardware components in smartphones and tablets are an object of study for further research. Future work may utilize software engineering for a better understanding of the needed features for Zakat application. In addition, usability engineering could be employed by future research to establish a robust and well-defined user interface (UI). In addition, different school of thought/Mazhab influence the development of the application which influence the making of an application that compatible with different Muslim school of thought. These suggestions and prospected future work aim to facilitate convenience to the user and promote more productivity of Zakat application.

## 5. Findings

Zakat applications need to run safely, efficiently, and meet the users' needs, this requires the availability of several functional and non-functional requirements. Non-functional requirements include speed, security and ease of use. Functional requirements consist of calculating, paying, log of Zakat payment, summary of Zakat, as well as utilizing GPS to reach the person in charge for help in Zakat matter, which all make it worthy of using the application. With clear user requirements, awareness of smartphone development tools and enough time to develop an application, the finding of this research is the following:

- Using SDLC, a Survey could be implemented to elect Zakat application requirements from prospect users.
- GPS could be further investigated and utilized in Zakat applications.
- To assess a developed Zakat calculator, the following criteria are suggested to be studied: usability, Usefulness and the easy to use.

- Implement software engineering in analyse and design of Zakat calculator

- Utilize usability engineering for the development of user interface (UI) of the application

- Instrument database

It is hoped that the findings of this research will encourage developers; especially Muslims, to make more effort to develop a worldwide application that is useful for all ummah (Muslims), as well as easy to use and usable.

## 6. Conclusion

This work draws upon the use of SDLC methodology to propose some of the system requirements for Zakat Application, these requirements include for instance calculating, paying, log, and summary of Zakat. Zakat calculators can be either for the web, or smartphones. This work suggests considering user perception beside the needs earlier to the development of such an application, the market of technological devices and used platforms to be considered too. Lastly, testing the usability, usefulness and ease of use of the system is needed and can be achieved through qualitative or quantitative research.

## Acknowledgement

## References
Ahmad, N. A. N., Akhbariee, N. I., & Hafizuddeen, M. (2013, March). Requirements analysis of android application using activity theory: A case study. In *2013 International Conference of Information and Communication Technology (ICoICT)* (pp. 145-149). IEEE.

Al-Bukhari, I. (2013). *Sahih Al-Bukhari: The Early Years of Islam*. The Other Press.

Ali, M. M. (2011). *Holy Quran*. Ahmadiyya Anjuman Ishaat Islam Lahore USA.

Asghar, M. Z., Batool, U., Bibi, F., Ismail, S., & Zahra, S. R. (2016). Financial Studio: Android Based Application for Computing Tax, Pension, Zakat and Loan. *arXiv preprint arXiv:1612.04692*.

Al-Utaibi, A. (1999). *Towards a unified system of Zakat accounting: the case of the GCC countries* (Doctoral dissertation, University of Wales. Cardiff).
Bagad, V. S. (2009). *Radar Systems*. Technical Publications.

Dennis, A., Wixom, B., & Tegarden, D. (2015). *Systems analysis and design: An object-oriented approach with UML*. John wiley & sons.

Hakim, A. R., Mulazid, A. S., & Meiria, E. (2018). E-Zakat: Redesign the collection and distribution of Zakat. KnE Social Sciences, 433-452.

Jobe, W. (2013). Native Apps vs. Mobile Web Apps. International Journal of Interactive Mobile Technologies, 7(4)

Korpilo, S., Virtanen, T., & Lehvävirta, S. (2017). Smartphone GPS tracking—Inexpensive and efficient data collection on recreational movement. *Landscape and Urban Planning*, *157*, 608-617.

Mobile Operating System Market Share Worldwide | Statcounter Global Stats. StatCounter Global Stats. (2021). Retrieved 4 October 2021, from https://gs.statcounter.com/os-market-share/mobile/worldwide/2020.

Moustakis, V., Litos, C., Dalivigas, A., & Tsironis, L. (2004, November). Website Quality Assessment Criteria. In *ICIQ* (pp. 59-73).

Nadzri, F. A. A., Rahman, A., & Rashidah & Omar, N. (2012). Zakat and poverty alleviation: Roles of zakat institutions in Malaysia. *International Journal of Arts and Commerce*, *1*(7), 61-72.

Perspectives, E., & Report, C. (2020). Cisco Annual Internet Report - Cisco Annual Internet Report (2018–2023) White Paper. Cisco. Retrieved 5 October 2021, from https://www.cisco.com/c/en/us/solutions/collateral/executive-perspectives/annual-internet-report/white-paper-c11-741490.html.

Pressman, R. S. (2005). *Software engineering: a practitioner's approach*. Palgrave macmillan.

Purwanto, P., Sulthon, M., & Wafirah, M. (2021). Behavior Intention to Use Online Zakat: Application of Technology Acceptance Model with Development. *ZISWAF: JURNAL ZAKAT DAN WAKAF*, *8*(1), 44-60.

Shabrina, G., Lestari, L. A., Iqbal, B. M., & Syaifullah, D. H. (2019, May). Redesign of User Interface Zakat Mobile Smartphone Application with User Experience Approach. In *IOP Conference Series: Materials Science and Engineering*(Vol. 505, No. 1, p. 012088). IOP Publishing.

Tang, X. (2016). A website for event management system. Dr.ntu.edu.sg. Retrieved 4 October 2021, from https://dr.ntu.edu.sg/handle/10356/68167.

Utami, P., Suryanto, T., Nasor, M., & Ghofur, R. A. (2020). The effect digitalization zakat payment against potential of zakat acceptance in national Amil zakat agency. *Iqtishadia*, *13*(2), 216.