

The Concept of User Participation in the Development Process of E-government System

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ABSTRACT

It is important to consider the user participation in the development of the e-government system for ensuring that this system is free of any conceptual issues and all user expectations can be satisfied during the system deployment. Development of an e-government system can be very hard due to the presence of different stakeholders and problems included in this system. This study explains the components of e-government system and the importance of user participation in the development process. Then, user centred development methodologies are introduced and their limitations are highlighted. Following this, agile principles were proposed as a possible solution to actively engage users in e-government development while minimising the development time. The researchers also considered the issues affecting the coordination between the user requirements and expectations after the launch of the system with respect to minimising the time in applying iterations.

Keywords : E-government Development, User participation, User-Centered and Agile principles

I. INTRODUCTION

Information and Communication Technologies (ICTs) had the major impact on e-government systems and transformed them into their current state. The application of the ICTs presented many opportunities for the evolution of the e-government systems from an information source to a service provider, which furthers assists in the development of society [1]. e-government system was established for the purpose serving and improving the work of all stakeholders like Business organisations (G2B); Governmental agencies (G2G); and Citizens (G2C) [2].

Users are believed to be the most important component of any information system since these systems are developed to satisfy all user demands.

These systems also help in establishing and maintaining the connection between the user demands and the system development, which can be challenging [3]. Many studies have tried to determine the missing connection between developers and users [4, 5]; however, they did not consider the significance of the insights provided by users for developing the e-government systems.

An e-government is similar to any system and consists of hardware and software that operate in tandem and offer better services to the users. An e-government system differs from other systems in 2 ways, i.e., system complexity and the effort required in the system development [6]. As this system is applied for serving numerous and diverse groups of users [7]; development of e-government system

requires a lot of time and effort by the developers, for fulfilling the user requirements.

The knowledge and experience of the developers help in developing better e-government systems to satisfy the user demands, which have been determined earlier. The e-government system needs to be thoroughly tested before its launch. The users are considered to be the final testers as they can spot all the flaws, which have been missed by the developers. Feedback is collected from the users regarding the issues and problems in an e-government system, which helps the developers to improve these systems.

Users' feedback and complaints are generally collected after they have used the e-government system and faced some issues. Such complaints are noted after the system was developed and launched without considering the user requirements. Hence, the developers and system manufacturers must always consider user demands, because after launching the system, it is very difficult to solve the flaws in the system. The user involvement could help in the development of the e-government system since the users can look beyond the ideas of developers [8]. In the best scenario, the users must be allowed to help in the development of an e-government system and they must decide which of the functions are necessary. Hence, the users should support the developers and help them overcome any conceptual flaws noted in the early development of the e-government system. If the users are allowed to participate in the improvement of these e-government systems, all user feedback could act as guidelines for mitigating the flaws observed during the system development. E-government system serves the stakeholders as it can consider users' insights regarding the nature of e-services and the manner in which such services are offered.

II. E-GOVERNMENT SYSTEM

An e-government system differs from other systems because of the complexity of its user expectations and technical features involved in the system [9]. Many researchers have debated the ability of the e-government system to satisfy user demands [10]. The success of the e-government projects can be evaluated using various measures like user satisfaction. However, the major point of debate is still related to the involvement of the users in the development of these systems. User participation must be encouraged as this factor helps in satisfying all user requirements. It must be noted that the users do not usually possess a technical know-how with regards to the implementation of their demands, hence, the user requirements and the developer knowledge needs to be efficiently coordinated. The developers must offer information about the system usage, type of e-services provided and all transaction-related processes. Furthermore, the e-government portals help the users easily access the e-government systems for deriving information and using the various services.

The users do not require any knowledge regarding the internal working of the different transactions in the e-government portals [11]. The developers have full knowledge about the system capabilities, needs, security measures, programming skills, etc. The developers can use social media for communicating with their users and increasing user engagement [12]. Several options must be provided for encouraging the users to participate in the development of their applications with the help of pre-made software, which can be used for developing the user's preferred functions and interface [13]. However; the use of the pre-made software has many limitations, wherein the experienced and knowledgeable users can easily manipulate the functions of the software. The

efficiency of the software, hardware and human resources used in the development of the e-government systems is also reflected in the development of other information systems [14]. User participation is seen to be the best method for developing the e-government systems as it could effectively coordinate the user requirements and the developers' knowledge. The stakeholders, main roles, benefits and system properties of e-government system are illustrated in "Fig. 1".

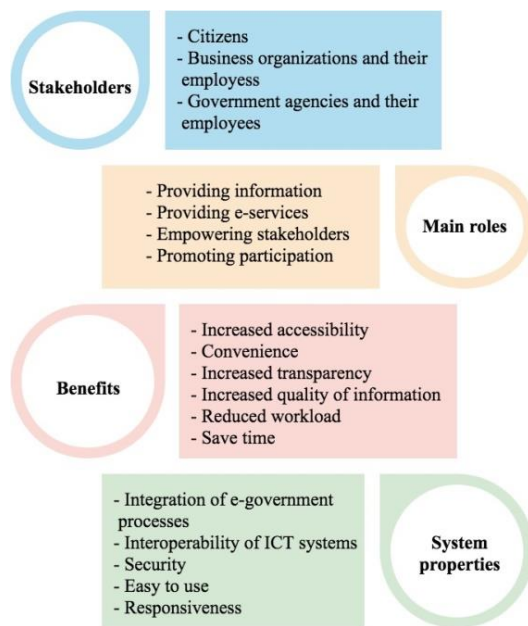


Figure 1: E-government system attributes [15]

III. USER PARTICIPATION

The term 'participation' is often misinterpreted. Many other studies have used terms like 'involvement', 'participation' and 'engagement' in relation with one another and also for implying the same meaning. The various terms, mentioned earlier, have to be properly distinguished as they contribute differentially to the process of e-government development. Engagement is defined as the degree of influence that technology can have on user-computer interaction [16]. User involvement is the ability of users to share their insights with the development

team unlike participation where users can have the control over decisions [17]. User participation is the ability of users to be part of the development cycle in e-government based on their view points [18]. By promoting user participation, the users can be informed about the manner in which every step would be implemented. Thereafter, the users can inform the developers if they accept or reject any of the processes.

Although users cannot control many factors involved in the developmental process, like 1) Users cannot control the payment amount involved in every transaction; 2) Users cannot decide the best hardware to be used in the system development process; 3) They must be able to access the data to some extent, such that it does not affect the privacy of the other users; and 4) The users cannot access the details of the security measures applied in the e-government system. On the other hand, users must be free to participate in the development of any additional e-services, functions and the displayed information in future after the launch of these systems.

In this study, the researchers used the term, "user participation", for describing the ideas, insights, suggestions and feedbacks offered by those users who can affect the development of the e-government systems. These suggestions are interpreted and used by the developers in various system developmental processes. Here, the researchers explored the effect of user participation by increasing the coordination between the users and the developers for improving the development of e-government systems. Several issues are involved in the development of e-government system, like the miscommunication between developers and users, increasing workload of the developers, and the time interval between collection of the user requirements and the final system launch [19]. These issues make the system

very different from what it was envisioned in the early stages of e-government development [20]. Governmental organisations should learn from the private sector, which effectively markets its products and services to the target consumers. The term “new public management” is used for describing the movement that re-established the idea of public service. Thereafter, based on the lessons from the private sector, governments realised the importance of considering these stakeholders and treating them as customers. The users’ expertise, time and efforts can be effectively used for addressing the issue of user participation in developing information systems. This includes extending the role of e-government stakeholders from a passive to an active user participation state.

IV. DISCUSSION

User-centred design gives the priority to user requirements in each step of the development process [21]. The developers’ logic may not define the system behaviour and the thought process of users. User-centred designs must include the development of technologies which can be easily implemented by including users in the designing process of the system. However, if the system is not easily understood by even the most experienced users, then the whole purpose of the user-centred designs is defeated. These designs can help in the development of a system which allows users to control tasks and determine the standardisation and simplicity of the developed systems.

The development process of information system must ensure the involvement of the users at every step, till its final launch. The involvement of users would increase their sense of relativity and ownership amongst the users, which increases the user satisfaction. Several system development models involve users in developing systems like the Joint

Application Development (JAD) [22] and the Rapid Application Development (RAD) [23]. However, the use of these models in the development of e-government systems can be time-consuming, considering the number of applications and functions of this huge system.

Agile approach can address the aforementioned constraints through rapid evolution and adaptation to the changes in the developmental processes. When users work along with the developers in developing the e-government systems, it can easily satisfy the user requirements [24]. The fast thinking and agile principles of the developers can help them develop a better system which considers the user needs.

The methods which involve agile principles in system development, like “scrum”, include many steps, known as sprints. Doing sprints involves the repetition of the sprints repeatedly, till the necessary objectives are fulfilled “Fig. 2”. Agile principles are very helpful in developing the e-government systems since the development team can easily apply changes in the system in every sprint based on the user requirements. Incremental rapid cycles in every sprint can significantly decrease the time in comparison to the user-centred designs while considering the user participation in system development.

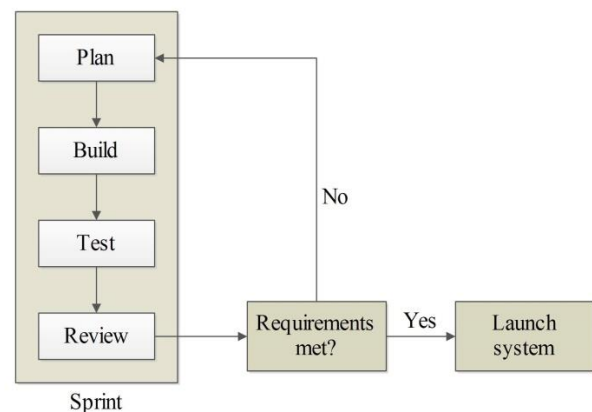


Figure 2: System developmental process, including many incremental rapid cycles (sprints)

V. CONCLUSION

There are several limitations affecting the applicability of user participation in the development of the e-government systems, which aim to focus primarily on users. In this study, the researchers have investigated the role of users in the development of such systems and their ability to extend user participation for bridging the gap between reality and design. User participation is important in several ways. Firstly, there exists coordination between the users and the system developers regarding system development and the production of several services and functions. Secondly, user-centred designs can have limitations as they fail to keep pace with the complexities of the e-government systems. Thirdly, the researchers described users' diversity and their ability to convey their requirements and convert them into effective functions and services.

The proposed solution involved the use of an agile approach which highlighted the cooperation between users and developers during the development of e-government systems. Adoption of these methods can increase user participation since they offer the users with a sense of belonging as they play an important role in system development. User participation using agile approach enables the developers to focus only on the iterations of the e-government system while applying orientation of e-services and functions in earlier stages. In future, other researchers can investigate the manner in which user participation affects the application of user satisfaction to assess the development of many e-government services.

VI. REFERENCES

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