Enhancing e-Participation via Gamification of e-Government Platforms: A Possible Solution to Sub-Saharan African e-Government Initiatives

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Abstract— In this modern age, countless business growth techniques have been researched on and research has proven that involving clients by gamifying the whole business interaction process.

Humans generally enjoy competition and rewards; thus people usually enjoy the thrill that comes with winning and being rewarded. Numerous organizations have employed the gamification methodology in order to grow their business, strengthen customer loyalty, generate leads, increase their competitive edge and ultimately increase revenue.

If this is possible in the business world, it might as well be applicable in the Electronic Government (e-Government) ecosystem – gamified e-services – as long as governments are able to treat citizens as consumers. The gamification approach to e-government systems is necessary because numerous e-government projects are abandoned as a result of citizen non-involvement.

This research discusses the possibilities of employing the gamification model as a means of enhancing e-participation in e-Government projects and also proposes the concept of gamification of e-Government initiatives to the Sub-Saharan African region so as to boosting e-Participation.

Keywords— e-Participation; Gamification; Electronic Government; Public Sector; Citizen-Centered Design.

I. INTRODUCTION

Whether in the Electronic Government (e-Government) functionality of participatory decision making or general online services, citizen engagement is crucial to the success or failure of any e-government implementation. Organizations have employed gamification techniques as a vehicle in advancing their business to the next level, strengthen customer loyalty, generate leads and increase their competitive edge and ultimately increase revenue. An example is PLAYCALL, a contact center performance management software which "gamifies" performance allowing agents to see how their performance ranks among others at the company and utilizes KPIs (Key Performance Indicators) set by the company; a worker can track their progress or lack thereof and can react accordingly [1]. Just as the concept of gamification has been

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essential to the success of modern day businesses, this article expounds upon gamified e-services and their role in enhancing electionic participation.

In the next section, the concepts of e-participation and gamification are explored respectively; how the latter influences the former in the subsequent sections; the benefits are looked into; and finally conclusions are made.

II. LITERATURE REVIEW

A. E-Government and E-Participation

According to the UN E-Government 2016 Survey which measures various e-Government related indicators, eparticipation (electronic participation) which involves the use of online services to engage citizens and non-citizens, is quantified as value ranging from 0 to 1 and is measured as the E-Participation Index (EPI) [2]. According to the report, EPI measures e-participation according to a three-level model of participation that includes: (i) e-information - provision of information on the Internet, (ii) e-consultation - organizing public consultations online, and (iii) e-decision-making involving citizens directly in decision processes. Eparticipation is a key element in the e-government cycle because every information system is built for the end-user primarily. As such e-participation levels determine the success or failure of an e-government initiative. In order to achieve maximum end-user e-participation, this article proposes a more effective user-centered design approach which is encompassed by the concept of gamification.

B. Gamification

In a study by Wood [3], which involved applying elements of behavioral psychology and gaming to business, it was discovered that the same drive to participate found in the game player could be brought out in customers and employees. A system is said to be gamified when game design elements are applied to a non-game context to change people's behavior [7]. A perfect illustration of gamification would be earning a point for running a mile on a mobile application.

Thiel [6] outlined the elements of gamification; achievement, points, status, expression, feedback,

personalization, challenge, competition and time constraint, and pointed out that game-related aspects serve the purpose of a) creating a more gameful (e.g. fun) and therefore engaging experience, which in turn aims to b) affect users' motivations. The aim of gamification is to motivate players, hence, points are accrued, luring the players to return to the game so as to score more points. In a game, the rules are clearly defined, there's an obvious goal and one's progress can be measured in definite terms [2].

Psychologist, Ian Robertson coined the terminology, The Winner Effect, which simply holds the ideology that the more people (players) take on a challenge, achieve and derive pleasure, the more they want to do it in order to succeed [8].

C. Gamification in E-Government

Gamification in e-Government, though not prevelant, has been employed by some governments. Below are a number of instances:

- United Kingdom (U.K.): Idea Street A market developed in 2009, which spread like wildfire, where employees could suggest ideas for changes in the workplace, big and small, and others could trade stock in those ideas and overarching this was a system of game dynamics that encouraged participation [5]. Employees of the Work and Pensions Department in the U.K. who were actively involved gained recognition as and when they won likewise the agency immensely benefited from this implementation since it pushed for more contributions.
- Hawaii: In order to entice more users to state websites via my.hawaii.gov, a one-stop shop for citizens' government needs and services, where with a single sign-on access so that someone who needs to file a birth certificate can also reserve a campground or check procurements with the same user name and password [11]. The portal contains other fun feedback components with good user interface (UI) and the Web Marketing Association named it the best government website.
- Sweden: In Stockholm, a speed camera lottery encouraged safe driving by entering those who obeyed the speed limit into a lottery pool funded by drivers who had been fined for traffic violations and in a three-day demonstration, traffic speed decreased 22 percent [2]. An experiment on assessing the impact of gamification on e-government applications was conducted by Fernandes and Junior [9] where two different versions of a mobile application composed by a series of questionnaires, so users could learn while using the application, younger users were greater than the number of lessons and it proved that gamification could also be implemented on egovernment applications but extra precaution and respect must be taken on player restrictions and confidentiality.

III. METHODOLOGY

This study gathered data from the World Bank, UN (United Nations) e-Government Survey, and conducted a literature search from scientific literature (journals and conference proceedings) as well as reports using a combination of the following keywords "e-participation", "e-Government", "gamification" and "Sub-Saharan Africa". In order to gain insight, selected gamified e-Government projects around the world deployed within the last 5 years were cited so as to create the awareness of how necessary gamification is to enhancing e-participation.

IV. AN OVERVIEW OF SUB-SAHARAN AFRICA AND E-PARTICIPATION

The Sub-Saharan African region is classified as the region beneath the Sahara desert on the map of Africa with a population of approximately 1 billion people and consists of the following nations; Angola, Benin, Botswana, Burkina Faso, Burundi, Cabo Verde, Cameroon, Central African Republic, Chad, Comoros, Democratic Republic of Congo, Congo Republic, La Cote D'Ivoire, Equatorial Guinea, Eritrea, Ethiopia, Gabon, The Gambia, Ghana, Guinea, Guinea Bissau, Kenya, Lesotho, Liberia, Madagascar, Malawi, Mali, Mauritania, Mauritius, Mozambique, Namibia, Niger, Nigeria, Rwanda, Sao Tome And Principe, Senegal, Seychelles, Sierra Leone, Somalia, South Africa, South Sudan, Sudan, Swaziland, Tanzania, Togo, Uganda, Zambia, and Zimbabwe. Rising out of decades of civil unrest and poverty, the sub-region is experiencing a gradual economic shift though it still faces issues of corruption as well as other stumbling blocks to development. As reported by the World Bank, growth in Sub-Saharan Africa is described as recovering and is projected to pick up to 2.6 percent in 2017 and to 3.2 percent in 2018, likewise, per capita output is projected to increase to a modest 0.7 percent growth pace over 2018 and 2019 [4].

According to [5], corruption in the sub-region has a strong positive relationship with gender equality, age group (15–64), and innovation and that less corrupt countries tend to be more balanced in terms of gender equality, are more innovative.

In the AU's (African Union) 2030 Agenda, the aspirations to accelerate development and growth are outlined and desired to be achieved by inclusive growth and sustainable development, science and technology-driven innovation, good governance, democracy, respect for human rights, justice and the rule of law [2].

In the area of science and technology-driven innovation, egovernance is gradually making headway and is a promising solution to numerous public sector processes as well as knitting government, citizen and business relations. The following countries in the sub-region have taken steps in initiating eparticipation;

> Mozambique: Engaging citizens in Maputo to monitor waste management services via web and SMS Service Monitoring System or Monitoria Participativa Maputo (MOPA) [2].

- Kenya: Volunteer mapping of cities by the younger generation hence, by surveying communities, they create new public information and lay out pathways, clinics, water points and markets with the goal of sharing that information as much as possible in the community, thereby creating an essential social and economic resource
 [2].
- Tanzania: OpenStreetMap (OSM) technologies used in mapping flood-prone areas. These maps helped in the response to the outbreak by identifying the most affected areas, locating victims, and providing other critically important information about water points and sanitation [2].
- Uganda: U-report is a mobile participation that allows young Ugandans to speak out on what is happening in communities across the country and work together with other community leaders for positive change [10].

TABLE I. E-Participation Index (EPI) in Sub-Saharan Africa from 2010 to 2016

	Indicator	
	EPI	
2010	0.063984375	
2012	0.060673469	
2014	0.19767449	
2016	0.242477755	

Sub-Saharan Africa's poor performance in e-participation is evident in Table I. Though there has been a minimal increase over the course of 5 years, the performance is not encouraging and as such this needs to be boosted. Hence, the inclusion of a gamification approach in developing e-government is deemed as a potential solution to this deficiency. All of the above projects are signs of efforts made by citizens and government to encourage e-participation but there remains a wide gap between where the sub-region is and where it ought to be. As such, gamification is recommended as a supporting solution to increasing e-participation. Many e-government initiatives in Africa fail because they try to copy and paste from the developed world without taking local realities into consideration but this can be addressed by promoting innovations that can address local challenges [5]. In as much as researchers in the sub-region would want to experience a shift it is pertinent to explore the innovation environment locally and produce gamified solutions tailor-made for each country.

TABLE II. Sub-Saharan African Mobile & Internet Connectivity Statistics (Source: World Bank)

	Indicator			
	Fixed broadband subscriptions	Individuals using the Internet (% of population)	Mobile cellular subscriptions	
2010	1,345,449	14.6	387,953,418	
2012	2,095,874	17.1	544,447,403	

2014	3,575,190	19.6	681,211,736
2016	4,006,146	22.4	752,990,050.6

Carefully observing Table II, though not as encouraging as expected, the positive trend in increasing number of individuals subscribing and using the internet as well as mobile subscriptions is visible from 2010 to 2016 per the data gathered by the World Bank. It is also evident that the majority of sub-Saharan Africa's population widely patronize mobile phones rather than broadband subscriptions – which is due to the fall in prices of both handsets and airtime as well as the transition from cell phone ownership as an elite status symbol to a necessity for adults [19]. Hence, mobile operators in Sub-Saharan Africa are continuing to innovate and reach more subscribers. This is an optimistic ground for the inclusion of gamification into the e-governance platforms to increase eparticipation. Mobile usage continues to increase in the subregion, meaning more users are getting connected to the information superhighway. Thus, providing a large user-base mostly the younger and tech savvy generation - for egovernment applications.

A. Exploring the Benefits of Gamification

Examples of potential problems that gamification may address are as follows:

- The most important aspect is with respect to the increase in user e-participation since a large population of the sub-region is made up of youth. Gamification will potentially keep users actively involved in public sector e-services.
- Raising the awareness of dangers resulting from the waste of natural resource or dangers of using mobile phones while driving [13] and this is evident in Stockholm [3]. It has the potential of being implemented in numerous government ministries, agencies and departments as well as at the local government level. For example, an increasing sector of concern for governments and citizens alike—given threats to biodiversity, depletion of fossil fuels and other minerals and climate change fallouts—is the environment sector [10].
- The dissemination of information from citizens to the government is crucial. In order to make the activity less burdensome, since it is a voluntary act, scoring points as an achievement for reporting an environmental issue which is then verified could save the environment. Thus, gamification is not only benefitting the sub-region, it is also encouraging citizens to be on the look-out for problems to be solved.
- Gamification may encourage new "players", such as children, to interact with administrative services or initiatives organized by local governments to increase their awareness of issues challenging governments and have a better opportunity to form future "good" citizens [12].

 Gamification creates opportunities for users to engage with each other around a shared passion, and can trigger a competitive spirit which can enables users to be more engaged with a system [13]. Hence, creating shared experiences for achieving a defined goal(s).

V. DISCUSSION

Throughout the sub-region, a number of technology-driven public sector innovations are springing up yet e-participation is subpar as seen in Table 1. Despite the fact that researchers have recommended solutions such as education [15], it is also important to create user-friendly and citizen-centric gamification for e-government systems to attract the younger generation [16] in participatory local or national decision making. In order to push a successful e-government agenda, it is crucial to explore novel and creative means of engaging citizens. As such, gamification is a suitable remedy to this poor EPI performance in the sub-region.

Research by [3], [6], [12] and [17] prove the efficacy of gamification as a trusted means of enhancing e-participation. Gamification has the potential of positively engaging workforces and citizens; thus in order to implement it successfully in e-governance, it is important that experts in the field of game design be brought to the table since they understand the dynamics.

VI. CONCLUSION

Though governments may not be in competition with anyone, their ultimate aim regarding e-government implementations is to gain their returns on investment (ROI) and as such gamifying e-government solutions should be considered as a means of aiding governments (both local and central) to reap the benefits, i.e. higher e-participation leading to positive ROI. To obtain an optimal level of success, just as any corporation would tackle their business issues, the most efficient model is a consumer-centered model. Taking cues from the business ecosystem, it is important for every e-government system to be citizen-centered; where citizens are treated as clients. In doing so, these e-government initiatives not only aim at replacing cumbersome public service procedures but engage citizens and encourage greater patronage amongst the general populace. In line with the assertions of Thiel and Fröhlich [18] that, fostering motivation to participate is achievable by adding game-related elements to those platforms.

Thus, this research highly recommends gamification to all governments, particularly Sub-Saharan governments so as to positively boost e-participation at all levels of government.

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