

MOTIVATING THE STAKEHOLDERS THROUGH A CONTEST BASED MOBILE APPLICATION FOR PROMOTING AND REWARDING SUSTAINABILITY INITIATIVES

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Abstract

Sustainability is a key challenge confronted by nations, industry, governments leading to an integrated effort across all stakeholders. Information Communications Technology (ICT) is found to act as an enabler for promoting the awareness about sustainability and encourage all stakeholders to voluntarily participate in the sustainability initiatives. Mobile App, one of the most important ICT tool, has the ability to reach masses easily for promoting sustainability. While there are many mobile apps which have been creating awareness about the importance of achieving sustainability in the world in various aspects, the number of apps which can capture and reward the sustainability initiatives of all stakeholders is minimal. It is found that the voluntarily participation of all stakeholders would improve if they are rewarded for their contribution towards achieving sustainability. Therefore, this paper proposes a mobile application to promote, capture and reward the sustainability initiatives of types of stakeholders. This mobile app would be useful for governments and regulatory authorities for increasing the overall sustainability from diverse perspectives.

Keywords: *Sustainability, rewards, motivation, ICT, mobile application, stakeholders*

Introduction

Sustainability has gained a lot of attention in the recent past. Awareness about its implementation among corporate leaders, compliance requirement due to the compulsion from government and other regulatory bodies, contribution of sustainability for increasing the brand image of an organization and consumer preference for sustainable products and services are among various reasons for this increased focus on sustainability (Prattipati, 2010; Min-Seong Kim et al., 2018). Many organizations have adopted innovative measures and strategies to

achieve sustainability. However, it is not adequate if sustainability is achieved only by one or two individual organizations, but it is required that sustainability should be achieved by all stakeholders including the government and regulatory authorities to build sustainable cities and sustainable healthcare system for betterment of quality of life of all citizens (Galbreath, 2006; Prattipati, 2010). Thus, a holistic and integrated management of sustainability initiatives in corporate houses, environment, society, climate, energy, health, education and

living conditions of citizens in an economic and sustainable manner is the need of the hour (Prattipati, 2010). This requires participation and contribution from all stakeholders in the initiatives towards achieving sustainability, be it in health-care system, in transportation system, and in the general living. In some countries, there are laws related to some selected areas of business activities which make it mandatory for business organizations to contribute towards the achievement of sustainability. But, in majority countries, sustainability initiatives remain to be voluntary by nature both in business as well as in general society (Guizhen He et al., 2017).

While everyone appreciates the importance of sustainability, lack of motivation, encouragement and absence of reward system is discouraging people to participate voluntarily in activities related to it (Andrew J. Felo et al., 2015). This calls for a professional system to capture the sustainability initiatives done voluntarily by the employees of organizations, by the management of organizations, by the citizens of a society and by all the other stakeholders for the purpose of rewarding those initiatives by the governments of respective areas (Guizhen He et al., 2017).

In order to encourage all stakeholders, it is found that Information Communication and Technologies (ICT) can play a major role as an enabler by involving the stakeholders, and by capturing their initiatives and by rewarding them appropriately for their contribution towards sustainability initiatives (Cosmin Tomozei et al., 2015; Guizhen He et al., 2017). Mobile Applications, which are part of ICT can create competition among different types of stakeholders in the society through mobile based contests related to sustainability conducted by the respective governments (Bond et al., 2012; Chiabai et al., 2013; Guizhen He et al., 2017) and can increase the public

engagement in this activity. In spite of many positive aspects of ICT and mobile applications in sustainability, it is still not totally accepted by people and it has not yet captured the focus of many researchers (Berkhout and Hertin 2001). In this context, this paper aims to develop a prototype of mobile application which motivates all stakeholders to participate voluntarily in sustainability related contests and get rewarded.

Though there are many mobile apps available for creating awareness about sustainability, it is found that the number of apps which reward the stakeholders for their efforts towards the achievement of sustainability are very less. Therefore, there is a need to develop a mobile application which can capture the efforts of all types of stakeholders to reward them suitably based on the effort. This paper fulfills this need and attempts to fill the gap in the existing literature by developing a mobile application which aims to motivate the voluntarily participation of all stakeholders by rewarding them for their contribution towards achieving sustainability. The scope of this app is applicable for all types of stakeholders and it would be very useful for governments and regulatory authorities for increasing the overall sustainability from diverse perspectives.

The paper is divided into three sections. The first section focuses on literature review, the second one focuses on development of the mobile application and proposed contests and rewards, and the third section focuses on flow and details of the proposed mobile application.

Literature review

Sustainable development has gained its importance worldwide after the publication of Brundtland report (1987), as a part of World Commission on Environment and Development (WCED) of United Nations. The outcomes and consequences of deteriorating human environ-

ment and natural resources was addressed by UN through WCED. Research related to sustainability gained lot of momentum after the publication of Brundtland report (Maisam Abbasi and Fredrik Nilsson, 2012) which defines sustainability as an effort that seeks to meet the needs and aspirations of the present without comprising the ability to meet those of the future.

The second most prominent definition of sustainability was the one given by John Elkington (1997) who coined the term 'The Triple Bottom Line Approach'. In this approach the three entities 'People, Plant and Profit' are considered for defining sustainability. From a corporate perspective Peter Graf of SAP AG (Snabe, 2010) defined sustainability as an increasing effort for short-term and long-term profitability by holistically managing social, environmental and economic risks and opportunities. Anne M. Stoughton (2012) studied the driving forces of sustainability through three case studies of large corporations and concluded that sustainability efforts exist in three different perspectives at three levels, i.e. i) at the organizational level (integration perspective), ii) at the functional level (differentiated perspective) and iii) at the individual level (fragmented perspective). Studies on sustainability have migrated from studying a single individual company to the entire society and supply chain consisting of various companies (Seuring & Muller, 2008; Schaltegger & Burritt, 2014; Salvado et al., 2015).

Seyfang (2006) has suggested Community as a new tool to promote sustainable consumption and observed that the 'new economics' literature argues that sustainable consumption is characterized by five factors: localization, reducing ecological footprints, community-building, collective action, and building new social institutions.

Gordon et al., (2011) have examined the approaches to sustainable marketing through the contribution of three existing

marketing sub-disciplines; green marketing, social marketing and critical marketing. More so, research on impact of cultural orientation on attitude towards sustainability by Tonya Boone and Rishtee Kumar (2012), indicated that respondents have exhibited higher levels of inaction in sustainable behaviour because they felt that fate would ultimately dictate the resolution of problems such as environmental pollution, overcrowding and social inequity. From a social perspective, sustainability mostly stresses quality and human rights; focuses on analyzing labor conditions, practice and social welfare; supplier's adhering to the laws and regulations etc. (Beske et al., 2014).

The percolation of sustainability initiatives, ideas and strategies was limited only to the top management level in many organizations and the middle and lower level management lacked motivation and required lot of encouragement and a proper system to capture and reward these efforts and their implementation (Andrew J. Felo et al., 2015). To gain competitive advantage, it is essential for integrating the core business activities of the organization with the strategies for achieving sustainability. Similarly, governments need to integrate the sustainability efforts with their ideology in the society (Galbreath, 2006).

Information and Communication Technologies (ICT) have been playing a commendable role in promoting, creating awareness, capturing the initiatives related to sustainability efforts in organizations as well as in society through mobile applications. ICT provides transparency, greater accessibility, and ease to the citizens for all their services. ICT enables economic growth by broadening the reach of technologies such as high-speed internet, mobile broadband, and computing; expanding these technologies itself creates growth, and the fact that technologies make it easier for people to interact and make workers more productive creates additional benefits (Prattipati,

2010). e-Participation, as a mobile tool based on contests in China is found to promote the inclusion of the public in participative and deliberative decision-making processes, thus contributing to a transformation of the interaction between government and citizens in environmental governance and sustainable development. Citizens have started participating in sustainability contests in this initiatives voluntarily (Guizhen He et al., 2017). Despite these positive participatory dimensions, the wider influence of ICT on sustainable development is still not well understood and strongly disputed (Berkhout and Hertin, 2001). The gap between individuals that benefit from the digital technology and those who do not is known as the digital divide, emphasizing inequalities in Internet access (Castells 2001; Murdoc and Golding 1989). Citizens that are less digitally and technologically savvy, such as the elderly or those who cannot afford a smart phone, may lose out and actually risk becoming less well represented in decision-making processes. The motivation of people to participate in e-Participation in China was studied on two aspects, i) self-reported levels of concern about environmental sustainability issues and ii) the primary reasons for participating in public environmental actions. The study found that cost, ease, convenience and government requirement among other several factors as important ones in this participation (Guizhen He, et al., 2017). Achievement of social sustainability through mobile GIS applications with a focus on health sector was studied by Cosmin Tomozei et al., (2015). It is found that GIS applications and Mobile devices are accessible, powerful and useful for data processing and transmission without a substantial effort by the elderly people, by means of specific mobile software applications. Through them it is found that social sustainability can be

achieved (Cosmin Tomozei et al., 2015). Usage of tablets, mobile applications and other intelligent electronic devices in healthcare is widely popular among different nations (Radzuweit et al., 2014). Green apps are more effective in promoting sustainability by information dissemination and providing tools and resources across domains Brauer et al., (2016). Designing of mobile applications which are citizen-friendly encourages their voluntary participation and motivate them to contribute towards sustainability. Mobile technology is by now accepted as a means of fulfilling some of the routine activities of people in many countries and this acceptance would increase much more if tangible gains are provided by the government (Hobololo et al., 2017). One such glaring example of a contest and reward based citizen-friendly mobile application to motivate citizens to actively participate in sustainability efforts of the government is the Swachh Bharat Andoid App, titled as mSBM App, launched in 2014 by the Government of India towards 'clean India 'movement (Govt. of India Report, 2016). This app motivates the citizens to upload the photos of garbage found in any place and asks them to write a comment and submit it through the app so that an immediate action can be taken by the concerned authorities in that particular area. Many citizens participated voluntarily in this initiative. Another mobile application, designed by Khalifa University, Abu Dhabi for achieving sustainability through contests by encouragement citizens in UAE is found to reduce electricity consumption, decrease consumption of fuel through car-sharing, and increase the environmental sustainability (Iyad Rahwan, 2011). Similarly, there are several general apps promoting sustainability such as OLIO and TOO GOOD TO GO apps related to food wastage, GOODGUIDE app related

to providing information about green products and impact of non-green products on health.

Oreco is another mobile app which uses 'carbon footprint calculator, makes it fun, easy and rewarding the participation of citizens for initiatives to reduce global warming. Another very prominent sustainability app known as Joulebug promotes awareness about how the everyday habits of people can contribute to the achievement of sustainability and it rewards their participation through mobile based contests. Tap – Find Water Anywhere is another mobile application developed for reduction of usage of plastic water bottles, provides information about the nearest drinking water refilling station to avoid buying of water supplied in plastic water bottles and rewards the consumers for using these water refilling stations. All these mobile apps contribute to sustainability directly or indirectly by encouraging and promoting the voluntary participation of all stakeholders. It is found that majority of these apps only provide information, create awareness and encourage participation of stakeholders towards achievement of sustainability but do not focus much on rewarding their participation.

Therefore, there is a need to motivate and reward the sustainability initiatives of all types of stakeholders and a contest based mobile application is one of the easily accessible channel towards this.

Research gaps & methodology

The research methodology adopted is a comprehensive literature review of existing mobile applications for achieving sustainability. The gaps in the literature are identified and found that many of the existing mobile applications used for sustainability are only providing information, creating awareness and encouraging participation of stakeholders. But, the literature suggests that voluntary participation of people has its own limits

and there needs to be a mechanism to capture and reward their efforts for creating a competitive environment for achieving sustainability (Prattipati, 2010; Radzuweit et al., 2014; Guizhen He et al., 2017; Min-Seong Kim et al., 2018). This paper develops one such contest based mobile application. Subsequently the objectives of the study that we intend to meet are as follows:

- 1.To develop an innovative contests based mobile application to reward sustainability efforts of all stakeholders.

- 2.To develop the flow of mobile application for the purpose of capturing the sustainability efforts of stakeholders for rewarding them appropriately.

Development of the mobile application prototype

This section of the paper discusses the criteria adopted for developing the context based mobile application for promoting, capturing and rewarding the sustainability of all types of stakeholders by the government. The intended for usage by the regulating authorities of government or by the government itself.

The purpose of an integrated mobile app is to educate, excite, engage and reward the stakeholders for their initiatives towards sustainability. The overall sustainability in a society can be achieved only when all the stakeholders are part of it (Galbreath, 2006) and contribute voluntarily with enthusiasm (Guizhen He et al., 2017). In this study, the stakeholders are classified into three types, i) Organizations across industries and employees, ii) Individuals, communities and associations and iii) Universities, Colleges, Schools and other educational institutions.

The basic structure of the mobile application for each of the above stakeholders is

mentioned in Tables – 1, 2 and 3.

The structure mentioned in Table 1 is related to Type – 1 Stakeholders mentioned above, i.e. Organizations across industries and their employees.

Table 2 is related to Type – 2 Stakeholders mentioned above, i.e., Individuals, communities and associations.

Table 3 is related to Type – 3 Stakeholders mentioned above, i.e., Universities, Colleges, Schools and other educational institutions.

The flow of for Type – 1 Stakeholders begins with the ‘Purpose of Use of Mobile App’ as mentioned in Table 1. Here the basic purpose for which the mobile app is used by these stakeholders will be captured. It can be for water conservation, transport or energy conservation, to illustrate a few. The second level of the app for Type – 1 stakeholder will consist of ‘Nature of Contest’. Some of these contests are mentioned for the purpose of illustration in Table 1. The third level of the app requires the data to be uploaded by the Type – 1 stakeholders with evidence for the purpose of measuring their sustainability effort. The next level is related to ‘rewarding’ the efforts of stakeholders for achieving different types of sustainability. The last level of the mobile app structure will be the ‘sponsoring agency’ for providing the reward. The government can encourage as many number of sponsors as possible to reward the sustainability efforts of stakeholders and also promote their brand image.

All the levels related to Type – 1 stakeholders are described below.

- Purpose of Use of Mobile Apps – This describes what the proposed mobile based app would measure sustainable parameters based on input data or measure

directly.

- Nature of Contests or competition – This aspect mentions the names of proposed contests which are related to reducing the carbon emissions, reduction in energy consumption and water consumption.

- Sustainability Parameters – This aspect captures the data related to consumption of food, carbon emission in travel, extent of usage of recycle material, and initiatives or approaches for achieving sustainability by stakeholders. The users can upload their data with evidence.

- Incentives – This aspect captures the nature of incentives / rewards offered to the participants in the contests. The incentives include awards for maintaining sustainability, presentation of certificates, and distribution of prizes.

- Incentive Providers – This aspect describes the sponsors for providing the above incentives. Similarly, the other two tables describe the aspects pertaining to the remaining two stakeholders.

TABLE 1. TYPE – 1 STAKEHOLDERS: ORGANIZATIONS ACROSS INDUSTRIES AND THEIR EMPLOYEES (SUSTAINABILITY AT WORK PLACE)

Purpose of Use of mobile app	Nature of contest (Illustrative)	Sustainability parameters	Incentives	Incentive providers/ sponsors	Approaches / Initiatives Used
App to measure water, electricity consumption and CO ₂ emissions based on transportation and allocate points	#Corptransfest #Corpenergyfest #Corpwaterfest	Food / travel / use of recycle material	Awards and participation certificates, prizes	Organizations Scope for co-branding and co promotions to be explored Ex- Carpooling effort taken by employees can be rewarded by car or tyre or petrol organizations	To be mentioned by the participants.

Similarly, Table 2 below is related to the flow of the proposed mobile app structure for Type – 2 Stakeholders i.e., Individuals, Communities and Associations. In this table, illustrative examples of nature of contests, sustainability parameters, incentives, and approaches / initiatives used are mentioned.

TABLE 2. TYPE – 2 STAKEHOLDERS: INDIVIDUALS, COMMUNITIES AND ASSOCIATIONS

Purpose of Use of mobile app	Nature of contests (illustrative)	Sustainability parameters	Incentives	Incentive providers/ sponsors	Approaches / Initiatives Used
App to measure carbon footprint based on water, electricity consumption and CO ₂ emissions based on transportation and allocate points	#Foodfest, #Travelfest, #Waterfest, #Electricity, #Use of recycle and eco-friendly products	Food / travel / water / electricity / use of recycle material	Prizes such as Organic products, Stay in ecotourism places, Vouchers, Distribution of LED and solar lamps, eco-friendly society	Product and service organizations who sponsor these prizes and scope for joint sales promotion and co-branding For Example: Stay in Bamboo house for a day	To be mentioned by the participants

Similarly, Table 3 below is related to the flow of the proposed mobile app structure for Type – 3 Stakeholders i.e., Universities, Colleges, Schools and other educational institutions. In this table, illustrative examples of nature of contests, sustainability parameters, incentives, and approaches / initiatives used are mentioned.

TABLE .3: TYPE – 3 STAKEHOLDERS: UNIVERSITIES, SCHOOLS & COLLEGES

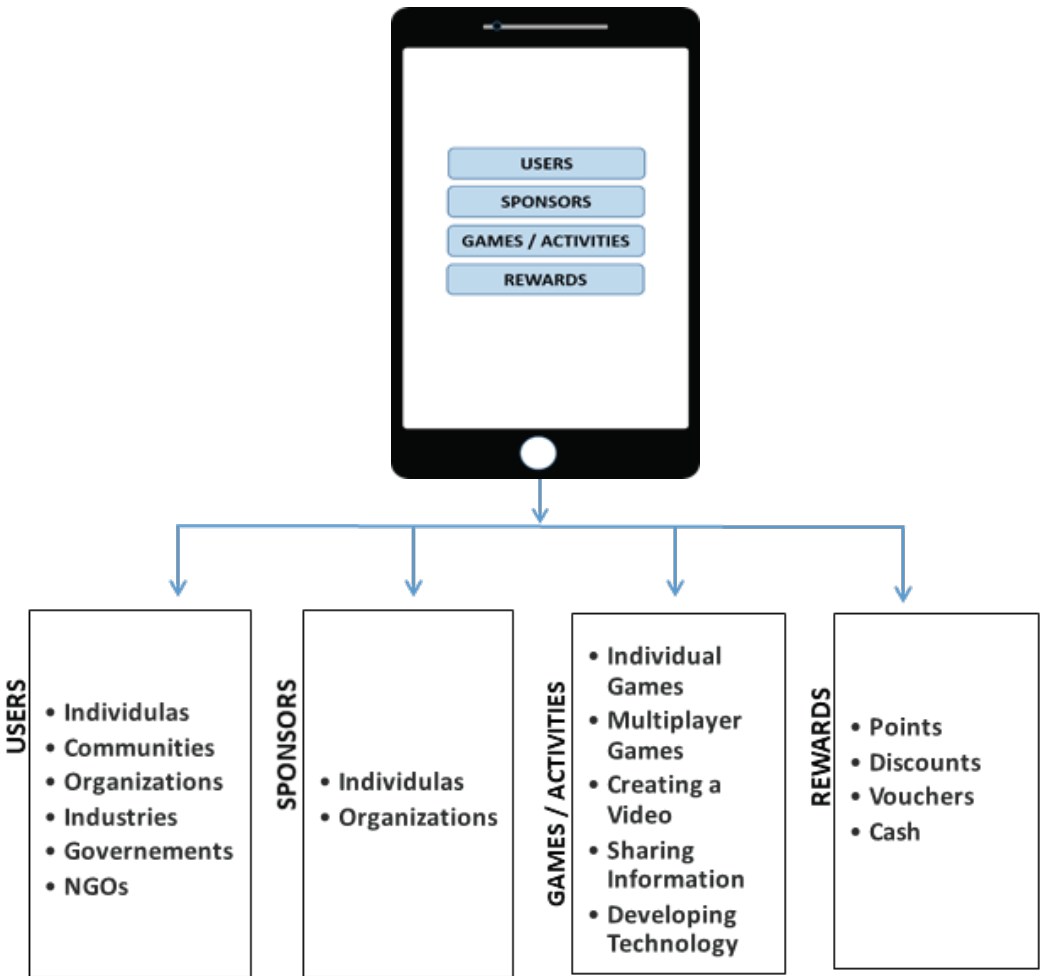
Use of mobile app	Nature of contests (illustrative)	Sustainability parameters	Incentives	Incentive providers/ sponsors	Approaches / Initiatives Used
App to measure footprint based on water, electricity consumption and CO ₂ emissions based on transportation and allocate points	#Foodfest, #Travelfest, #Waterfest, #Greenproducts	Food / travel / water / electricity / use of recycle material	Prizes such as Organic products, stay in ecotourism places, Vouchers, distribution LED and solar lamps	Product and service organizations who sponsor these prizes and scope for joint sales promotion and co-branding, cobranding	To be mentioned by the participants

Typical workflow of the proposed mobile application

A schematic diagram of the workflow of the proposed contest mobile app for capturing and rewarding the sustainability initiatives of stakeholders is presented in Figure – 1.

The main screen of the consists of four components in the menu, i.e. i- Users, ii- Sponsors, iii- Games / Activities and iv- Rewards. Details of each of these components is depicted in the boxes in Figure – 1.

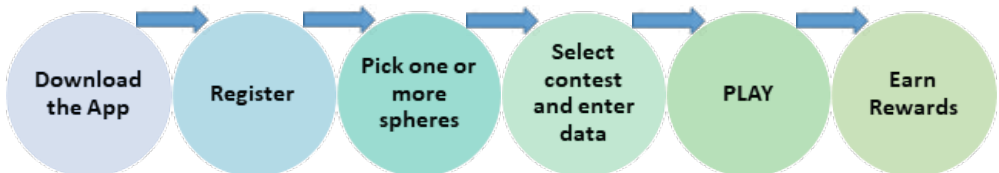
FIGURE 1: PROPOSED MOBILE APPLICATION FOR SUSTAINABILITY PROMOTION



Typical sequence of the activities of the proposed mobile app

The sequential flow of activities to be carried out by a stakeholder in the proposed mobile app after downloading and installing it in the mobile is shown in Figure 2 below.

FIGURE 2 - SEQUENTIAL FLOW OF ACTIVITIES OF THE PROPOSED MOBILE APP



Contribution of the study

While there are many mobile apps for promoting and making the stakeholders participate in the sustainability initiatives, absence of them which capture and reward those initiatives calls for development of a reward based mobile application. The proposed mobile app of this research would provide a platform for respective governments and regulatory authorities to capture and reward the sustainability initiatives of all stakeholders and thus it creates a competition among them and improves the level of participation.

Limitations and scope for further study

The proposed mobile application needs to validate through an empirical analysis of data from different stakeholders for understanding and analyzing the challenges in its successful implementation. Also, as the proposed app is a basic version, based on the empirical data, it can be modified further for additional features and for streamlining its implementation process.

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