

A Model of Essential Factors for e-Government Crowdsourcing Initiatives

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A note regarding prior publications

Parts of this dissertation have been reproduced in the following publications:

Cupido, K., & Ophoff, J. (2014). A Conceptual Model of Critical Success Factors for an e-Government Crowdsourcing Solution. In A. Ionas (Ed.). (pp. 77-84). Brasov, Romania: Academic Conferences and Publishing International.

Cupido, K., & Ophoff, J. (2014). A model of fundamental components for an e-Government crowdsourcing platform. *Electronic Journal of e-Government (EJEG)*, 12(2), 142-157.

However, since this dissertation is considered to be the source, neither of these publications are referenced in this dissertation.

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Abstract

Crowdsourcing using web technologies accesses the potential of a large network of people who respond to an ‘open call’. Successful commercial implementations of crowdsourcing have succeeded in mobilising a large number of participants and leveraging these ‘crowds’ as a source of ideas, and for problem solving (Geiger et al., 2011, Howe, 2006).

While governments perceive citizens as being apathetic when it comes to political participation, the citizen perspective is that their participation is “spectator politics where ordinary people have mostly become endorces of pre-designed planning programmes” (Williams, 2006, p. 197). Part of the reason for the lack of participation could be due to the increasing complexity of governing and the absence of alternative, more inclusive methods of participation.

Brabham (2009) has advocated for the use of crowdsourcing in the public sector as a possible means of increasing public participation, and for governments to access citizens as a source of ideas and solutions. However within e-Government there is a lack of knowledge regarding the implementation of crowdsourcing platforms (Koch & Brunswicker, 2011). The main research questions addressed in this study is: Which crowdsourcing factors are applicable and appropriate for government crowdsourcing implementations, so that citizens would be motivated to participate in such initiatives?

As crowdsourcing lacks a theoretical and conceptual foundation (Pedersen et al., 2013, Geiger et al., 2011) a conceptual model for government crowdsourcing implementations is developed and tested. The model uses Self-Determination Theory (SDT) to examine citizen motivation and the influence of incentives or rewards on participation. The model also addresses system factors such as task clarity and types, management, and feedback. The model also includes effort, performance expectancy, as well as behavioural intention from Unified Theory of Acceptance and Use of Technology (UTAUT).

Mixed-methods were used as it was the best approach to answer the research questions. A sequential explanatory design was used, beginning with a quantitative phase followed by a qualitative phase. On the one hand quantitative methods allow for a broad perspective, whereas qualitative methods allow for deeper understanding and insights.

Results show that citizens would be interested in participating in a system that included the elements in the proposed model. System management and support, rules and feedback as well as effort and performance expectancy were identified as the most important factors. This

research benefits future work by building a conceptual foundation for potential e-Government crowdsourcing initiatives.

1 Introduction

While it is acknowledged that citizen participation in government is low, labelling citizens as being ‘apathetic’ may be an incorrect assumption as there may be a variety of reasons for the lack of ongoing citizen participation in government. From a citizen’s perspective it may be based on a principled stance or constraints because of lifestyle or social reasons (Brücher & Baumberger, 2003). It could also be because of a lack of ‘citizen-friendly’ participation mechanisms provided by government. When it comes to available mechanisms, citizens perceive their involvement as “spectator politics where ordinary people have mostly become endorceses of pre-designed planning programmes” (Williams, 2006, p. 197).

Advancements in Information and Communications Technologies (ICT) have empowered individuals to create and share content and the increased availability of Internet-enabled mobile technologies have made it even easier for people to connect and collaborate. More connected citizens should mean a greater potential for engagement between government and citizens. However, as governments have failed to implement e-government platforms, citizens have resorted to political engagement and participation in different ways and on their own terms (Bang, 2009). Some interactions take place on Social Networks (SN), however Hampton et al. (2014) found these were not ideal platforms for political engagement and could instead result in an overall decrease in political participation.

The opportunities and potential afforded by the increased number of connected individuals did not go unnoticed by the private sector, and some embarked on initiatives to access the ‘crowd’ as a source of ideas and for problem solving (Howe, 2006). From an organisational perspective the outsourcing of an internal business function, to a large group outside the firm in the form of an ‘open call’, is called crowdsourcing. A potentially large network of people respond to these ‘open calls’ to assist with the completion of allocated tasks or by offering ideas and solutions to problems posed (Geiger et al., 2011).

1.1 Situation of Interest

Unlike some other technology-mediated platforms, such as discussion groups or social media platforms, a crowdsourcing initiative can impose certain structures and processes that guide participants towards specific outcomes. How these are implemented can either positively or negatively affect individual motivation to participate on the platform. Besides poor system aesthetics and usability, individual motivation is affected by aspects such as incentives, mechanisms for engagement, participant safety, as well as the overall communication of activities, and feedback. While a government-driven crowdsourcing platform would need to

adapt these components for use in a political context, the use of crowdsourcing factors could offer methods for renewed government-citizen engagement.

This research addresses the following main question:

Which crowdsourcing factors are applicable and appropriate for government crowdsourcing implementations, so that citizens would be motivated to participate in such initiatives?

A crowdsourcing campaign puts out an ‘open call’ to solicit ideas or solutions, and it may consist of many tasks such as simple voting through to more complex collaboration. While private sector crowdsourcing can be very specific and restrictive when it comes to the required task, citizens may require far broader inclusion from public sector implementations. This would require deliberation as to the splitting and design of tasks, so that users of different levels could participate. System factors such as the management of processes facilitate user participation, as well as serve to guide the ‘crowd’ towards an end-goal. Some crowdsourcing systems also use a variety of different incentives to motivate user participation. This would include bounties or prizes, or through mechanisms for contributor recognition. Other users may just participate because it is ‘fun’, or they want to help because they perceive it as being good for the community. It is therefore important to determine the combination of motivations suitable for use within a public sector context in order to facilitate solution design.

In order to answer the main question, the following sub-questions are investigated:

- Which types of tasks are best addressed using a crowdsourcing platform for citizen input?
- What task processes need to be taken into account in order to facilitate citizen participation on a government crowdsourcing platform?
- What combination of motivations would work best for encouraging public participation on a government crowdsourcing platform?

To answer these sub-questions, a literature review is conducted to extract components of a crowdsourcing platform as well as aspects related to individual motivation. This is used to develop a conceptual model, which also directs the research design and implementation. A sequential explanatory mixed-method approach is used, beginning with quantitative data collection. This is followed by qualitative data collection in response to a call for more crowdsourcing cases to add “rich qualitative data... to the stable of research on the crowdsourcing model, all with the intent to develop best practices and core findings for use in government” (Brabham, 2010, p. 1128). After data analysis, a refined model is presented.

1.2 Relevance of Study

While the use of crowdsourcing presents some potential to increase public participation in government, it is an emerging area of research that lacks a theoretical foundation (Geiger et al., 2011) or established conceptual frameworks (Pedersen et al., 2013), especially with regard to its application in the public sector. While private sector examples of crowdsourcing may provide some guidelines for implementation, the use of crowdsourcing within a political context may require more focus on some areas or the inclusion of additional functions and features. By way of an example, an open call by local government is likely to evoke more emotive responses and engagement from a constituency as outcomes could directly affect participant's lives. A government-driven initiative would therefore be subject to far greater scrutiny. Besides adding to the much needed research on crowdsourcing in general, the specific contribution of this research is towards a greater understanding of crowdsourcing implementation within a political context.

While citizens occasionally engage in political dialogue on social networks such as Facebook and Twitter, these are privately-owned systems, and governments are largely reactive in these environments with little means for structured engagement. The use of crowdsourcing not only presents alternative modes of participation but could also give government some means to facilitate and manage an engagement process. The benefits for government range from the potential to increase ongoing citizen participation, to accessing citizen ingenuity and, more importantly, increased legitimacy. This has direct application within many countries where citizens are mostly absent from ongoing participation processes.

1.3 Chapter Outline

Following this introduction, Chapter 2 of this dissertation presents a literature review covering citizen participation, technology and e-government. This is followed by a description of crowdsourcing, Self Determination Theory (SDT), as well as aspects related to platform implementation which could have an effect on participation in crowdsourcing initiatives.

In addition to a description of the research methodology, Chapter 3 outlines the instrument designed to fit the proposed conceptual model as well as the data collection process. Additional sections also cover the data analysis approach as well as consent and ethical considerations.

Chapter 4 presents an analysis of the research findings beginning with the quantitative results. A discussion of the results follows which then also includes qualitative data, adding richness and greater understanding to the quantitative findings.

Chapter 5 concludes the study with a summary of the research as well as highlighting the limitations of this research, and suggestions are also made for future research.

2 Literature Review

Advances in technology have allowed individuals to be more connected, create and share content, and collaborate with others. Crowdsourcing could allow for the creation of alternative means of engagement and potentially increase citizen participation in government. Some key crowdsourcing factors include incentives to motivate individual participation, as well as other technology-related aspects. This chapter looks at individual motivation through the lens Self Determination Theory (SDT) as well as other components of technology-mediated social participation. The review of literature leads to the development of a conceptual model which also includes constructs from the Unified Theory of Acceptance and Use of Technology (UTAUT), and this model is used to direct the following phases of the research.

2.1 Citizen Participation

Typical citizen participation, amounts to nothing more than casting their vote during elections. All the blame for low voter turnout and lack of on-going participation in government is usually laid at the feet of citizens (Brücher & Baumberger, 2003).

As in many other countries, the South African government promotes the development of a community participation, as well as mechanisms, processes and procedures for community participation (Williams, 2006). Public hearings and draft bills for public comment is law in South Africa, but ordinary citizens are mostly absent, some on principle, and others due to impracticalities based on lifestyle or other social reasons (Brücher & Baumberger, 2003).

Citizen apathy is not the reason for low participation, but rather that of exclusion, or the “uncoupling of the political authorities from ...the ‘laypeople’ ” (Bang, in Li & Marsh, 2008, p. 249). This is in part due to the increasing complexity of governing, which leads to exclusion. Bang (2009) describes the emergence of two political identities, the “Expert Citizens”, and “Everyday Makers” as a response to this exclusion. “Expert Citizens” are involved in, and interested in politics, and often speak on behalf of the less privileged (Marsh, 2011), but could however also be a part of the problem. These “Expert Citizens” are often members of Non-Governmental Organisations (NGO), and work within existing governance frameworks (Vromen & Collin, 2010), which according to Bang could lead to the further exclusion of “Everyday Makers”.

The “Everyday Makers” are part-time participants and are more directed towards issues at a local level. They live by a different view of everyday experience, Bang (Marsh, 2011) with do it: for yourself, where you are, for fun but also because you find it necessary, ad-hoc or part-time, concretely instead of ideologically, with self-confidence and show trust in yourself, and with a system if need be. These indicate a ‘loose’ relationship that citizens have with political

participation, and any engagement is on their own terms, and probably outside of the system. Using the ideas of Bang, some parallels can be seen between the participation mechanisms available within South Africa, and Nyalunga (2006) stresses that this lack of participation at a local level can have a negative impact on democracy.

Brabham (2009) viewed the World Wide Web as a means to further reduce the constraints placed on citizen participation in democracies, particularly with mobile phones set to become the primary devices with which to access the Internet by 2020 (Kaplan & Haenlein, 2010). ICTs therefore provide opportunities for greater citizen communication with government.

2.2 Technology

Advancements in ICTs, has changed the way we communicate (Kolsaker & Lee-Kelley, 2008). The switch from Web 1.0 to Web 2.0 heralded a change in how users interacted on the web and, combined with the prevalence of Internet-enabled mobile phones opens up a wide range of opportunities for citizen engagement. Mobile phones are part of a collection of mobile technologies that include laptops, personal digital assistants (PDA) and tablets, as well as electronic document readers, also known as e-readers. Of the mobile technologies, mobile phones are the most ubiquitous (Poblet, 2011). Although fixed-line Internet has long been problematic in South Africa, and a cited reason for the 'digital divide', Hermanns (2008) noted that mobile phones have the ability to reduce the effect of the 'digital divide', a sentiment shared by Trimi & Sheng (2008).

Since the advent of Web 2.0, users became both the producer and the publisher and ushered in the proliferation of user-generated content (UGC). The design principles for websites such as Twitter, Facebook and YouTube, was merely to facilitate the delivery and sharing of UGC (Joshi, Finin, Java, Kale, & Kolari, 2007).

Government electronic services, according to Cloete (2012), however have turned out to be mostly informational, and one-way in nature. Some citizens on the other hand are already engaging in dialogue with others in 'alternative' ways, in the form of political commentaries on blogs, forums, and on Social Networks (SN) such as Twitter and Facebook (Bang, 2009).

2.3 E-government

As e-government includes the use of ICTs to improve the operation, taxonomy of applications would include government to business (G2B), government to government (G2G), government internal efficiency and effectiveness (IEE), as well as overarching infrastructure. Of specific interest in this research are the relationships between government-to-citizen (G2C), citizen-to-

government (C2G), and citizen to citizen (C2C), and the use of web technologies (Grant, Hackney, & Edgar, 2010).

E-government implementation within a developing country context however, has met with several failures. Total failures are defined as those that were either implemented and then abandoned, or just not implemented at all. Partial failures were those which did not attain the desired goals, or resulted in some undesirable outcomes. As high as 35% of e-government implementation in developing countries are total failures and 50% are being considered as partial failures (Heeks, in Dada, 2006). The reason for this failure is as a result of the “mismatch between the current reality and the design of the future e-government system” (Dada, 2006, p. 4). A “Hard-soft” gap exists, and is highlighted by the difference between the ‘hard’ technology and the reality of the social context in which the system is placed. This, in part could be as a result of a lack of management and skills to correctly implement e-government initiatives, as well as delivery on a platform that may not be suitable for the majority of citizens. There are also infrastructure issues that can prevent citizen interaction. In addition, there is a need for the public sector to ‘change and reengineer’ its processes to the new technology and culture of e-government system functions (Dada, 2006).

M-government has become a possibility because of the combination of mobile technologies such as mobile phones and wireless networks, and according to Trimi & Sheng (2008) would enhance government:

- by providing immediate and direct access to information
- by reducing the ‘digital divide’ effect
- providing wireless access from areas un-serviced by land-lines
- possibly a mechanism to reduce corruption
- increase government employee efficiency through access to information

Tools such as Ushahidi have been used in election monitoring, as well as disaster management with individuals posting information via their mobile phones (Ushahidi, 2015). During the 2008 Obama election drive, citizens interacted via social networks such as Twitter and Facebook, and on blogs. This use of alternative tools has not only provided citizens with the soapbox, but has in a way proved to be liberating, in that citizens are becoming more adept at finding, sharing, and reworking information.

Crowdsourcing emerged as a low effort and low cost way of eliciting ideas from a vast number of people (Leimeister, Huber, Bretschneider, & Krcmar, 2009). Some companies, realising that not all the talent exists within their organisations, opened their traditionally closed ‘boundaries

of the firm' to 'outsiders', in order to access a greater source of ideas. Under the right conditions, this configuration has been shown to have outperformed in-house activities for idea generation (Poetz & Schreier, 2012). Brabham (2009) has advocated for the use of crowdsourcing in the public sector as a possible means of increasing public participation, and for governments to access citizens as a source of ideas and solutions.

2.4 Crowdsourcing

As a concept, crowdsourcing is not new – the term was coined by Howe (2006) and described as, a means to outsource a function previously performed by someone internal to an organisation, to a larger network of people in the form of an 'open call'. Another explanation is that it is a system that allows its owners to recruit help from a crowd of humans to help solve a problem (Geiger et al., 2011).

Saxton, Oh, & Kishore (2013) define it in terms of an intersection between the crowd, outsourcing, and the social web, as seen in Figure 1.

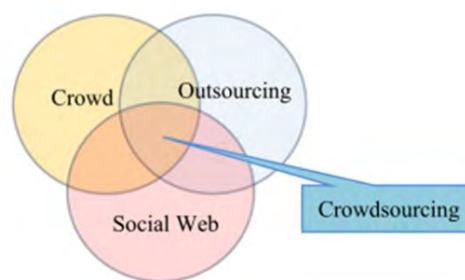


Figure 1. Three Defining Elements of Crowdsourcing (Saxton et al., 2013)

The mention of the 'crowd' in crowdsourcing can be somewhat misleading, as some crowdsourcing solutions require individual contributions, while others require collaboration between individuals, hence assembling a 'crowd'. It has emerged as a means to cost-effectively harness talent by utilising online communities as a source of innovation, and often brings about unusual solutions to problems.

Estellés-Arolas & González-Ladrón-de-Guevara (2012) list forty different definitions, and even the word 'crowdsourcing' itself is sometimes used in the same breath as 'co-creation', 'open innovation', and 'citizen-sourcing', while others include 'user-generated content', 'peer production' and 'smart mobs' (Pedersen et al., 2013). One definition that may be a good fit for the use of crowdsourcing in a public participation context is that, "It involves an organisation-user relationship whereby an organisation executes a top-down, managed process that seeks the bottom-up, open, creative input of users in an online community", and it is this management that makes it "productive and full of potential to do good" (Brabham, 2013, p. 127). This

definition could then distinguish a government-based crowdsourcing as being a more deliberate process, and may have greater appeal to governments who are bureaucratic and more process-driven. The primary components of crowdsourcing are that of the organisation, the crowd itself, and a platform to “link the two together and to provide a host for the activity throughout its lifecycle” (Zhao & Zhu, in Seltzer & Mahmoudi, 2012, p. 194). The organisation component in this context is government, the crowd component refers to citizens as part of an online community, and the platform is the technology which plays a vital role as a facilitator.

2.4.1 Types of crowdsourcing

The four types of crowdsourcing are shown in Figure 2, and outline the mechanisms that can be deployed by an organisation in a crowdsourcing initiative. Crowd rating is akin to voting, where every contribution is equivalent to the next, such as a simple poll, or is similar to a ‘like’ on Facebook, and in this sense voting in political elections is similar.

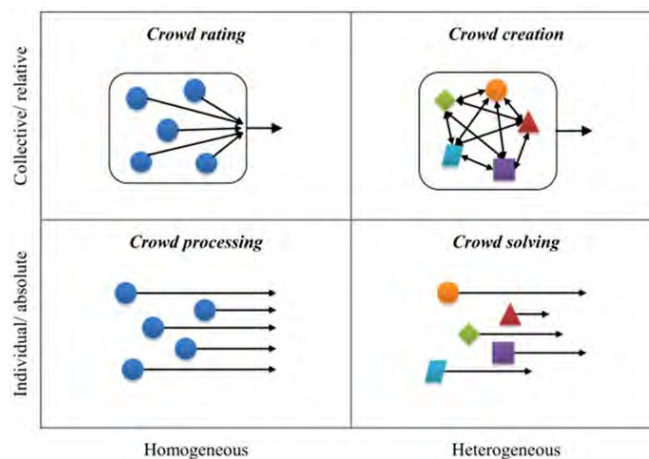


Figure 2. Four types of Crowdsourcing (Geiger et al., 2011)

Amazon’s Mechanical Turk, is an example of crowd processing and utilises the crowd to perform a large number of small tasks, where individuals are motivated by a financial reward for the completion of each task (Amazon, 2014). Crowd solving is similar to crowd processing in that it allows for a variety of inputs, however it seeks the best solution to a given problem, and can be evaluated according to a prescribed set of parameters. An example of this is FoldIt, a crowdsourced online game that attempts to solve the problem of protein folding (FoldIt, 2015).

Crowd creation on the other hand, is different to crowd solving, in that each contribution is evaluated in relation to others as the result of a collaborative effort, such as can be seen with Wikipedia (Yuen, King, & Leung, 2011), where content is entirely created by users. Lakhani

& Panetta (2007), noted that within the first five years of its inception, more than 300 000 volunteers helped to create more than 4.2 million articles, all of which was achieved with just two full-time system administrators.

A t-shirt design website called Threadless also leverages the crowd to source new designs as well as some “evaluation” (to vote on designs). Winning designs received cash prizes as well as merchandising discounts. The result is a high volume of designs with extremely low cost for design services (Threadless, 2015).

Other notable examples of crowdsourcing include Innocentive, as well as several Open Source Software (OSS) developments such as Linux, and the Firefox web browser (Linux Foundation, 2015, Mozilla, 2015). The Innocentive model works by offering a bounty or reward for a challenge. Companies provide the challenges and so-called ‘solvers’ compete to provide solutions, with the best being awarded the bounty (Innocentive, 2015).

Depending on the application, the four types mentioned often appear together in various combinations. Some may have an idea generation component, followed by crowd rating / voting. The different configurations cater for different types of users, who vary in interest and skill levels. Diversity is promoted within some crowdsourcing systems as heterogeneous group discussions are seen to produce better ideas (Price, 2009). Within the context of public participation, different crowdsourcing models may be appropriate. A homogenous group may be the result of contributions from a specific real-world community. In other cases diversity may be desired as a call would go out to anyone able to provide a solution, even if they are not part of the community in question. However, this may raise some concerns and some may call for only ‘locals to solve local problems’.

According to Nijaykumar (2010), the ‘crowd’ in crowdsourcing is in essence an online community. However it is important to note that an online community does not necessarily mean that it could be used to manage a crowdsourcing campaign. Even so, some aspects could be borrowed, by looking at a framework for technology-mediated social participation.

2.4.2 Technology-Mediated Social Participation

“Online discussion attendees, relative to non-attendees with comparable propensities to participate, score significantly higher in end-of-project social trust, community engagement, and political participation” Price (2009, p. 16). Technology-mediated participation presents several benefits over physical participation such as participating anonymously, and dispelling fear of intimidation or being singled-out. Participants can also ‘ease into’ the system by initially observing and learning from others, building competence and confidence, before deciding on

greater engagement. Technology-mediated participation could allow users to ‘experiment’, and with the correct structures and combination of rules and processes, facilitate user participation.

Preece & Shneiderman (2009), proposed the Reader-to-Leader (RTL) framework to assist in the understanding of the motives for technology-mediated social participation. The framework describes social participation in online communities, beginning with initial users, called ‘readers’, as indicated in Figure 3. The framework is not linear, so a progression from one stage to the next is not implied, as users may freely move between the different modes of participation, being that of reader, contributor, collaborator, and leader.

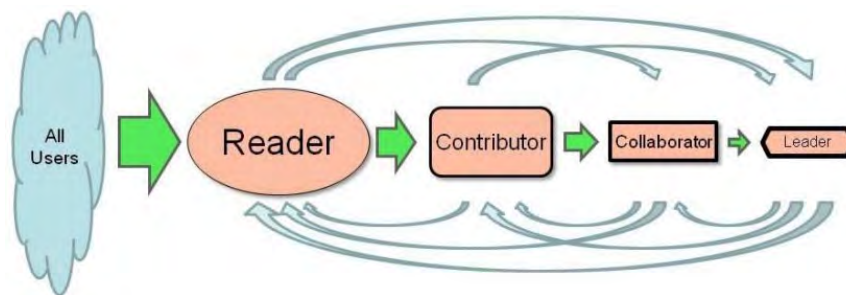


Figure 3. Reader-to-Leader framework (Preece & Shneiderman, 2009)

Confidence is enhanced through repeat visits, and user maturity comes about through increased activity within one stage by switching from one to another. Some motivations to participate could be from personal referrals, and return visits are encouraged by amongst other things, access to relevant content, aesthetics, and perceived privacy. The RTL framework highlights some important motivating factors that assist participation. As mentioned by Skinner (2009), it places importance on involvement beyond that of a ‘reader’ to foster skills development and confidence, which would increase motivation and result in greater community involvement.

Contributors initially start with small updates to existing content, and by also providing some of their own content. Himelboim, Gleave, & Smith (2009) also identify what they call ‘discussion catalysts’, these are users that facilitate conversation, often by just re-hashing content that originates from traditional media sources. Along with their increased confidence, contributor motivation is encouraged through a sense of belonging, a welcome environment, safety, and community support system.

Collaboration involves one or more users either discussing or working together to “create something or share information” (Preece & Shneiderman, 2009, p. 9), and can either be free of structure, or alternatively be highly structured and controlled. Other motivators for contribution and collaboration appeal to a personal need to stand out in a crowd, and the building and

maintenance of reputation by being visible using system mechanisms such as name recognition. The 'leaders' as described in the RTL framework would not only contribute, but also assist with the collation and synthesis of content, and in addition also act as mentors to newcomers.

The RTL framework points out factors that affect sociability, which is an important part of creating and maintaining an online community, as it influences engagement from initial participation to continued participation. This is crucial as continuing participation is also an important part of a modern democracy, as it could improve decision-making through an increase in a source of ideas, as well as limit corruption, because of on-going public scrutiny (Creighton, 2005).

Within the RTL framework, what is important is to provide mechanisms to progress users from being 'readers' to engaging further. It points to the need for on-going participation, which implies the need for additional motivations after users join. Vassileva (2003) lists some of the motivations to engage in an online community as, visibility of participants to others, reputation-building, offering incentives, as well as mechanisms that would allow for the development of online relationships. Another method of motivation would be to affect feelings or emotions, such as guilt, a sense of belonging and relatedness, or owing which according to Vassileva (2003) could in turn help to kindle feelings of altruism.

The RTL framework endorses feedback and recognition to address individual needs, through online visibility in order to receive acknowledgement from friends, family, and significant others. Preece & Shneiderman (2009) also cite a 'sense of belonging' as a strong motivator which according to Vassileva (2003) could inspire some to mentor others, or offer help and assistance. This would serve to develop user competence and confidence which is crucial role in keeping people motivated to participate on a platform.

2.4.3 Governments and Crowdsourcing

Within the context of citizen participation, different crowdsourcing types may be applicable. As mentioned before, the process of political elections is similar to a form of crowd rating in that it is an aggregation of individual opinions. The options within a government context would range from gauging sentiment through a simple opinion poll (crowd rating), distributed task processing (crowd processing), to knowledge gathering and creation, or combinations thereof. Crowd processing relies on the sheer numbers of citizens as a means to process information, but this would require the careful breakdown and planning of processing tasks. Crowd solving could solicit solutions to issues that are either raised by other community members or local councillors. More complex would be crowd solving as it would entail extensive deliberation

between the various stakeholders. A process of idea generation through crowd solving followed by crowd rating would accommodate different 'levels' of involvement.

Examples from South Africa include the political party AGANG who attempted to crowdsource ideas from citizens (Mdingi, 2013), and an IBM-led project called "Water Watchers", which allows citizens to report leaks, and the state of water supply using their mobile phones (SouthAfrica.info, 2013). Some countries such as the United States of America (USA) have experimented with crowdsourcing initiatives to tap into the ingenuity of their citizens (Kundra, 2010) through the use of a crowdsourcing petition platform, where 'bounties' or prizes were also offered for ideas or solutions. One implementation (challenge.gov) is driven by challenges and rewards, while another allows for citizen petitions. Those petitions that received sufficient support would 'require' a response from government. However some issues, such as the legalisation of marijuana attracted lobby groups who coordinated efforts, manipulating the system by repeatedly up-voting related posts. This resulted in their 'cause' being placed high on the government's agenda. Politicians were faced with responding to an issue that garnered enough votes on the 'open questions' platform, but was in no way representative (Howe, 2009). Similarly, crowdsourcing initiatives in Finland gave citizens the ability to propose and vote on new laws (Meyer, 2012), and raise petitions, where those with more than 50 000 votes would be up for consideration by government. One initiative that passed the 50 000 mark was related to farming animal furs but that was ultimately not passed by parliament, and many suspected would never have been passed. Other initiatives were related to changes in copyright regulation and same-sex marriages (Democracy One Day, 2013). Even though the same-sex marriage initiative received over 150 000 votes, initially it appeared that it would be rejected by the parliament as well. The concerns raised here was that the current political mechanisms did not adequately cater for citizen initiatives, and that like the rejection of the animal farming initiative, parliament had the final say. Ultimately however, the same-sex marriage bill was passed, but not without considerable public pressure (Lehdonvirta, 2014). The examples from the United States as well as Finland show that 'opening' government for comment and input from citizens should not be taken lightly as they could raise some unexpected and awkward challenges for government. In part this could be related to expectations of this new platform from both citizens and government. So while technology platforms allow for more opportunities for partnership and co-operation between government and citizens the guidelines for engagement need to be carefully considered.

Presently, government implementations of crowdsourcing gives a “semblance of participation but does not promote collaboration” (Warner, 2011). They face similar challenges to that experienced in private-sector initiatives, as noted by Bayus (2013) in that “one of the key challenges for companies with crowdsourcing communities is to get members to fully engage and participate, rather than sit on the fence and watch”, and that “keeping active participation over time is hard, because typically a lot of people may join, but very few people actively participate” on an ongoing basis. What has plagued crowdsourcing has been what would motivate individuals to join and use a crowdsourcing system (Pedersen et al., 2013).

2.5 Motivation

Besides the lack of knowledge as to the implementation of a government crowdsourcing platform (Koch & Brunswicker, 2011), Piyathasanan et al. (2011) also note a lack of crowdsourcing research into the true motivations for individual participation. Ryan & Deci (2000, p. 54) state that, “To be motivated means to be moved to do something”, or moved to take ‘action’.

SDT is illustrated in Figure 4 and defines different types of motivation. It ranges from unwillingness or amotivation, extrinsic motivation which is related to passive compliance, and personal ‘commitment’ in the form of intrinsic motivation. Intrinsic motivation relates to an individual drive to do something because of enjoyment, or satisfaction. Extrinsic motivation on the other hand relates to incentive or reward as ‘encouragement’ to perform a task (Kauffmann & Schulze, 2011), and is akin to external regulation as shown in Figure 4. Autonomy plays a big role in intrinsic motivation as it denotes choice and therefore being in control.

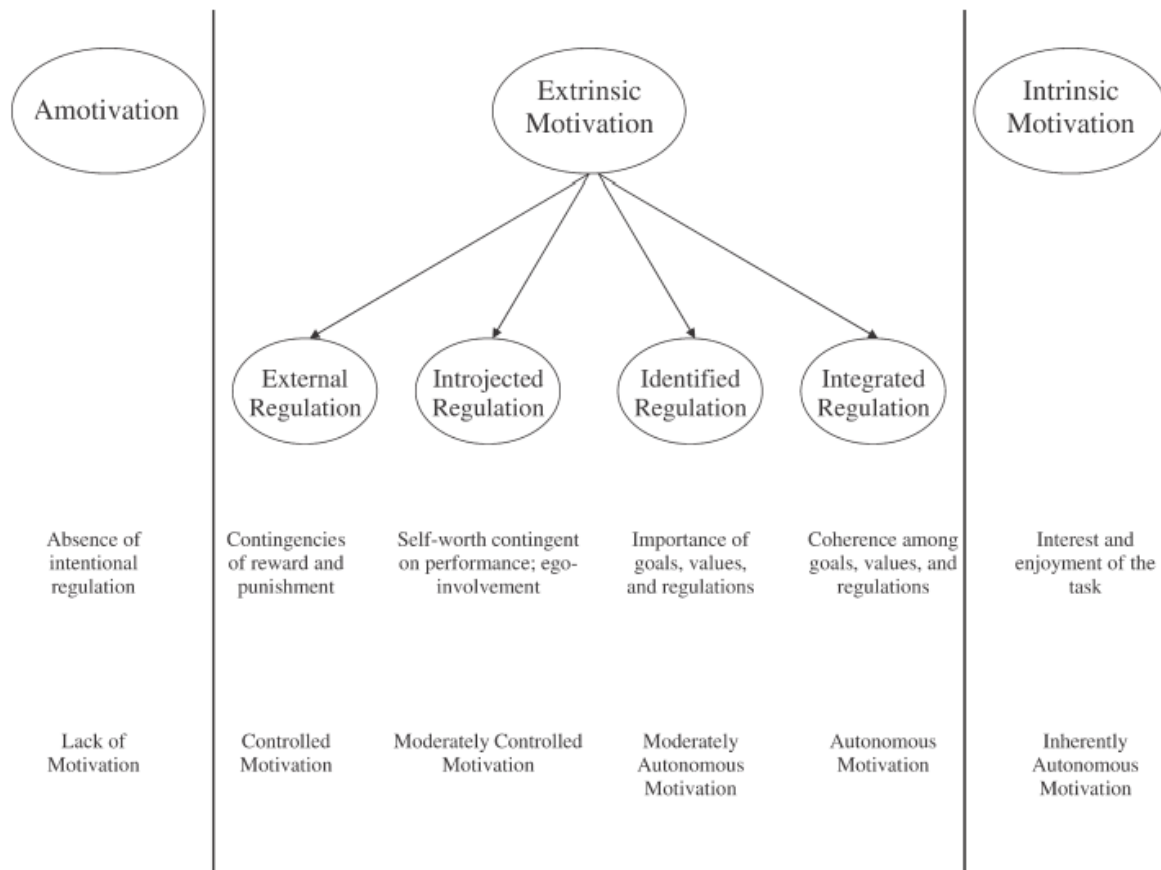


Figure 4. Self Determination Continuum (Gagne & Deci, 2005)

Control in the form of extrinsic rewards on the other hand reduces individual autonomy. The continuum is also an indication of the levels of internalisation with autonomy increasing from left to right and adoption of values or regulation. It also denotes the degree to which this has been integrated to be a part of the self (Ryan & Deci, 2000).

2.5.1 Amotivation

This form of motivation is the least self-determined, and is associated with a lack of intention to act. This comes about as a result of not valuing an activity, not feeling competent to do it, or not believing it would amount to anything (Ryan & Deci, 2000).

2.5.2 Intrinsic motivation

Intrinsic motivation is where autonomy and internalisation are at their peak and relates to an individual drive to do something because of enjoyment, or satisfaction. For an individual, autonomy denotes choice and therefore being in control. Within a crowdsourcing system, some tasks may be both intrinsically and extrinsically motivated. The initial pull could be from an 'ideas' competition that besides a reward, would also appeal to "a participant's inborn desire and from feelings of competence, satisfaction, and fulfilment." (Leimeister et al., 2009, p. 203).

For incentive-free initiatives such as Wikipedia, Nov (2007) indicates that it is important to understand the motivations for volunteers to contribute. Some Wikipedia contributors volunteer for altruistic reasons, others for recognition and status. Some may serve as a source of knowledge about functionality of the system norms and rules, whereas others may provide specific subject knowledge. The knowledge shared by experts could prove invaluable for participant confidence and competence on a subject, and in turn increase participation (Leimeister et al., 2009). However, while it is not possible to affect individual intrinsic motivation directly it can have an influence over participation, which leads to the hypothesis:

Hypothesis (H1): *Intrinsic motivation will positively influence the intention to participate in government crowdsourcing initiatives.*

2.5.3 Extrinsic Motivation

Extrinsic motivation is divided into types of behaviour regulation, being that of external, introjected, identified, and integrated. An example of external regulation would be requiring a monetary reward for action, or the need for other incentives or reward as ‘encouragement’ to perform a task (Kauffmann & Schulze, 2011). Internalisation of behaviour regulation occurs when external regulation of behaviours and their associated values no longer require the external stimulus. Introjected regulation is, “internalised extrinsic motivation” (Gagne & Deci, 2005, p. 334), where a behaviour regulation is taken in but is not accepted as one’s own (Ryan & Deci, 2000). This would lead someone to take action because of internal pressure to satisfy ego or to increase feelings of self-worth.

Extrinsic motivation reduces autonomy, but as extrinsically motivated behaviours are internalised, they become more self-determined, and being more self-determined equates to a feeling of being ‘in control’, and greater feelings of autonomy (Ryan & Deci, 2000). Internalisation also increases with feelings of competence, or the ability to perform, and relatedness which is the individual association with a group or community. Goals are more likely to be internalised if they are understood and you possess the necessary skills in order to perform the task (Ryan & Deci, 2000).

Relatedness also contributes to internalisation, and refers to the motivation to do something for a group to which one feels connected to, or a part of. This could manifest by ‘following the rules’, out of respect for significant others. Another example of internalisation would be to follow norms or rules of a group even in the absence of a threat or punishment.

More autonomy is perceived when there is identification with an activity which may not be intrinsically motivating, but is accompanied by a sense that it resonates with some internal values and goals, as well as an associated understanding of the importance of what needs to be

done. With integrated regulation, this association with values and goals goes deeper, beyond just awareness and importance of the behaviour, to the behaviour being perceived as a reflection of the self, or ‘who you are’. “Integrated regulation does not, however, become intrinsic motivation but is still considered extrinsic motivation (albeit an autonomous form) because the motivation is characterized not by the person being interested in the activity but rather by the activity being instrumentally important for personal goals.” (Gagne & Deci, 2005, p. 335) .

When extrinsically motivated behaviours become more internalised, they become more self-determined, and being more self-determined equates to a feeling of being ‘in control’ (Ryan & Deci, 2000). The move along the continuum from external regulation is accompanied by a change in attitude with regard to interest, perceived effort and coping, culminating in intrinsic motivation which is “correlated with interest, enjoyment, felt competence, and positive coping” (Ryan & Deci, 2000). This leads to the hypothesis that:

Hypothesis (H2): *Extrinsic motivation will positively influence the intention to participate in government crowdsourcing initiatives.*

Different crowdsourcing systems use incentives as motivation, whereas others are driven by individual, social, or personal values and principles. Batson et al. (2002) presents a ‘rewards’ perspective divided into material, social or self. This would include payment or prizes, recognition, status, praise and the upholding of self-esteem. These are not exclusive categorisations as Batson et al. (2002) notes that even though individuals may be driven by self interest, the result of their actions could also have some ‘unintended consequences’. An example would be an individual acting to gain self recognition while it also results in some ‘unintended’ social benefits for the group or community.

2.5.4 Self-Benefit

Some individuals may be driven by self-interest, whether it is for pure enjoyment, recognition or financial gain. Batson et al. (2002) take their lead from Kurt Lewin and link motives to goals. They describe values as being “relative preferences”, where a goal may be determined by one’s values, and the motivation would then be directed towards attaining that goal. This motivation then leads to behaviour. Batson et al. (2002) argue that individuals exhibit other motives such as altruism, collectivism and principlism, with principlism relating to moral sensibilities, such as justice. Altruism is the motivation to assist others more broadly, on an individual level whereas collectivism is characterised by a greater preference for a particular in-group. So, an individual, who may not otherwise be altruistic in one group, can be altruistic in a group where the other members are important to them (Vassileva, 2003). However, altruism is seen as a

means to gain an internal rather than an external reward, by feeling good about oneself, or to avoid negative feelings such as guilt. Hence Vassileva (2003) mentions that the use of emotions such as guilt, a sense of belonging and relatedness, or owing could help to kindle feelings of altruism, which can drive an individual to action. The following hypothesis is proposed:

***Hypothesis (H2a):** Self-interest and upholding self-image will positively influence the intention to participate in government crowdsourcing initiatives..*

2.5.5 Social Benefit

Henn, Weinstein, & Hodgkinson (2007) suggests that a strong positive relationship exists between social capital and civic attitudes. Strong or weak ties between individuals create trust networks, described using social capital (Putnam, 2000). Stronger ties are bonding relationships between homogenous groups, typically between family or close friends, characterised by frequent contact and high levels of trust. Bridging relationships on the other hand are between heterogeneous groups where there is less contact, and consequently lower trust. Power relationships or linking social capital are vertical connections, such as those between different socio-economic groups, or a link from citizens to government.

The relationship with others is therefore a major influencing factor. The motivation to participate is greater if ‘significant others’ highlight the importance of an activity. Hence participants seek approval and in addition this also promotes a ‘sense of belonging’, or ‘sense of relatedness’ in SDT terms and facilitates internalisation (Ryan & Deci, 2000). These significant others are those with whom there are close relationships and would include family members, friends or other close members within the online community (Leimeister et al., 2009). With regard to online communities, Preece & Shneiderman (2009) also cite a ‘sense of belonging’ as a strong motivator. Mentorship is also important and according to Vassileva (2003) help and assistance from community members plays a crucial role in keeping people motivated to participate.

Vassileva (2003) notes that reputation-aware participants are more likely to be motivated to participate in activities where they know the other participants and where they are known as well, which feeds individual need for recognition of the quality and quantity of their contributions (Preece & Shneiderman, 2009). Some people place greater emphasis on personal goals and attitudes over that of the group goals and norms. Social Identity theory indicates that individuals maintain self-identity through affiliation with an ‘in-group’, and withhold benefits from the ‘out-group’. Social identifiers are therefore different to altruists, as they would more likely push for a group benefits as opposed to benefits for any individual. Understandably, this

could manifest as a preference for local community issues as opposed to wider national concerns, and this leads to the following hypothesis:

***Hypothesis (H2b):** Social benefit will positively influence the intention to participate in government crowdsourcing initiatives.*

2.5.6 Material (Monetary Rewards)

“The crowd-sourcing model is faced with a question that has long concerned economists, psychologists, and management theorists; that is, whether and how financial incentives can be used to motivate workplace performance” (Mason & Watts, 2010, p. 100).

Leimeister et al. (2009) mention that motivation to participate comes about with the right mix of incentives. In the case of financial incentives, one large prize would attract those who were prepared to put in the most effort, which typically turns out to be those who were more skilled. On the other hand, those who were less-skilled put in more effort when there were several smaller prizes. Yet, the creativity of submissions was not affected by the size of the prize at all, and despite a large number of entries, a single large prize resulted in fewer creative ideas (Bayus, 2013).

Although, within the context of this research the other ‘internalised’ extrinsic motivators may be more desirable, financial rewards cannot be ruled out as a mechanism to drive participation. Lakhani & Wolf (2005) also note that both intrinsic and extrinsic motivations appear to be balanced within Open Source Software (OSS) projects, and Pedersen et al. (2013) also reports a study in which a purely intrinsic-driven crowdsourcing initiative, resulted in only 35% of tasks being completed, and conclude that some form of extrinsic motivation may still be required. Incentives feature strongly in both commercial and some government-driven crowdsourcing systems, hence the suggested hypothesis is:

***Hypothesis (H2c):** Monetary reward(s) will positively influence the intention to participate in government crowdsourcing initiatives.*

According to Pedersen et al. (2013) and Brabham (2008), the success of crowdsourcing solutions are also dependent on aspects such as the clarity of tasks or activities, and even extrinsic motivations would fail to drive participation if tasks or activities were poorly designed (Skinner, 2009).

2.6 Platform

Pedersen et al. (2013, p. 7) mention that “a positive user experience is a strong predictor of continued involvement” for participants in a crowdsourcing system. It is therefore imperative

to ensure the effective implementation of the platform for it to fulfil its role as facilitator between government and citizens.

2.6.1 Task (Purpose)

Leimeister et al. (2009) indicate that design plays an important part in the successful implementation of a crowdsourcing campaign or challenge. Although the creation of interesting, relevant and aesthetically pleasing content may seem like the obvious thing to do, it is sometimes difficult to achieve (Preece & Shneiderman, 2009). Design not only refers to aesthetics but also the plan for the challenge or campaign, and would also include the design of any incentives (Kauffmann & Schulze, 2011).

As indicated in SDT, a goal is only internalised when it is both understood and the person has the necessary ability or competence in order to achieve (Ryan & Deci, 2000). To encourage this, design considerations would have to include a planned process with clear descriptions of purpose or tasks. Failure to implement clearly defined processes can lead to confusion or a perception that the system is not useful, and result in individual amotivation. A process consists of steps that have to be taken in order to arrive at a certain outcome or result (Pedersen et al., 2013). These can range from a collection of simple tasks such as idea gathering to more complex collaborative activities. With reference to ‘unintended consequences’ mentioned before, careful design of a challenge or activity can result in self as well as social benefits. Whereby an incentive may be needed to inspire an individual to participate, their participation may result in benefits for others. Transparency expressed in the clear description of purpose and processes would therefore be helpful in avoiding potential conflict, and leads to the hypothesis:

Hypothesis (H3): *Clearly understandable descriptions of tasks, goals and outcomes will positively influence participation in government crowdsourcing initiatives.*

2.6.2 Task (Type)

A crowdsourcing system also needs to cater for different types or ‘levels’ of tasks. Tasks have to be carefully ‘graded’ so that it accommodates a wide variety of users. Users therefore need to be able find tasks that they feel comfortable with and competent at performing, otherwise it could result in amotivation (Elliot & Dweck, 2005).

Poetz & Schreier (2012) distinguish between needs-based and solutions-based enquiry. Needs-based would be in the form of a request for a list of problems or issues which may not have been addressed. A crowd-rating stage may follow, to identify the most pressing or popular items, and the solution itself may then still be left up to government. Conversely, tasks or challenges that request solutions may require a user with a different level of knowledge. Some

commercial crowdsourcing solutions restrict the more deliberative types such as crowd-creation to ‘expert’ users, believed to have specific domain knowledge, excluding others. This may be sensitive within a government-public participation context as it could be seen to ‘mirror’ the kind of exclusion that exists in real-world participation, alluded to by Bang (2009) between ‘Expert Citizens’, ‘Everyday Makers’ and government. Providing mechanisms that are as inclusive as possible is important for continued participation, hence the hypothesis:

***Hypothesis (H4):** A variety of task types will allow more people to participate but also positively influence participation in government crowdsourcing initiatives.*

2.6.3 Management

Although excessive control is not desirable, a lack of governance can make the system uncontrollable, an example of which was the attempted-and-failed crowdsourced novel, the ‘Million Penguins’ project (Pedersen et al., 2013).

Charalabidis et al. (2012) and Bani (2012) mention the use of an unstructured approach, such as the use of social networking tools by citizens in Iceland to craft their constitution. However, the use of social networking can generate unanticipated outcomes and serve to disrupt participation by others, as well as a loss of control over the process (Cobo, 2012). In this regard, some lessons can be learned from Communities of Practice (COP). Within organisations, COPs are voluntary associations between individuals with a common interest. In COPs, individuals feel that they could derive some value from association with others and therefore share learning. They then jointly convert that into knowledge which ultimately translates into a benefit for the company. For an organisation, COPs are to be supported as it would help individuals perform better. However, as it is not a formal structure it is better facilitated than managed or controlled, otherwise “they lose their unique identity and cease to function as self-organising COPs” (Grant et al., 2010, p. 227).

The socialisation process is important as it sensitises newcomers to the expected norms, policies and procedures. Socialisation helps to acclimatise users to the environment and assists in them acquiring the skills and knowledge required for participation. However, online communities typically lack the socialisation processes witnessed within organisations (Hsieh, Hou, Chen, & Truong, 2013). The process would help users become aware of the rules and policies which facilitate trust between participants, as well as in the system (Leimeister et al., 2009; Preece & Shneiderman, 2009).

An online environment can also serve as a ‘filter’, isolating participants from social queues, or potentially dangerous situations (Stromer-Galley, 2007), as could be experienced in real-world participation. Thus participants can be more open to freely express their opinions or objections.

The result is that those who engage in online participation also exhibit a greater propensity for social trust, community engagement, and political participation (Price, 2009). With the items mentioned in this section in mind, the following is proposed:

Hypothesis (H5): *Having management, rules and controls in place will positively influence participation in government crowdsourcing initiatives.*

2.6.4 Feedback and Results

“Feedback supports community and transfer of expertise” (Dow et al., 2012, p. 1014). The importance of this is stressed in SDT which links internalisation to an increase in competence in what is called “effectance-relevant feedback”. Amotivation can result in the case where there is either negative feedback, or lack of feedback. (Elliot & Dweck, 2005).

Motivation for future participation has been related to feedback provided to participant contributions (Halavais, 2011) and is an indication of how well participant opinion relates to that of the community. Feedback can come from community members who perform ‘support’ tasks that Lakhani & von Hippel (2003) describe as “mundane but necessary”, such as helping out newcomers and answering questions (Preece & Shneiderman, 2009). Within some OSS projects, the learning motive results in what Batson et al. (2002) called ‘unintended consequences’. An intrinsic motivation to learn by answering questions and providing feedback to others, results in feelings of competence on the part of the ‘helper’, while also motivating new members to engage further. Learning can come in many forms such as information supplied via the system itself, mentors, subject or domain experts, or collaboration with peers. The importance of community members is further stressed by Dow et al. (2012) who reiterates that novice users may require assistance in explaining tasks, or from domain experts to explain concepts. Skinner (2009) stresses the need to grow the confidence of those who are passive, into active participation and to encourage those that are already active to continue doing so. Failure to do this will further restrict opportunities for those outside the community to gain knowledge and skills.

Support for competence in the form of providing relevant feedback, opportunities to learn or explore and providing clear instructions, guidelines and rules will thus result in an increase in internalisation and hence self-determination (Ryan & Deci, 2000). Besides direct individual feedback, the motivation to continue participation in a public crowdsourcing initiative would be negatively affected if results or benefits were not reflected in the real-world (Warner, 2011; Lampel & Bhalla, 2007). Communication, in the form of providing feedback as to the decisions made as a result of citizen involvement in initiatives, is vital to ongoing citizen participation. Therefore the following hypothesis is presented:

Hypothesis (H6): *Providing feedback and showing tangible results in the real world as a result of participation in government crowdsourcing initiatives, will positively influence the likelihood of participation in similar initiatives in the future.*

2.7 Conceptual Model

Hypotheses one to six were derived from the literature reviewed, and the mapping between the factors and hypotheses is listed in Table 1.

Table 1. Hypotheses 1 to 6

Hypothesis	Factor
(H1): <i>Intrinsic motivation will positively influence the intention to participate in government crowdsourcing initiatives.</i>	Intrinsic Motivation
(H2): <i>Extrinsic motivation will positively influence the intention to participate in government.</i>	Extrinsic Motivation
(H2a): <i>Self-interest and upholding self-image will positively influence the intention to participate in government crowdsourcing initiatives.</i>	Self Benefit
(H2b): <i>Social benefit will positively influence the intention to participate in government crowdsourcing initiatives.</i>	Social Benefit
(H2c): <i>Monetary reward(s) will positively influence the intention to participate in government crowdsourcing initiatives.</i>	Material (Monetary Rewards)
(H3): <i>Clearly understandable descriptions of tasks, goals and outcomes will positively influence participation.</i>	Task (Purpose)
(H4): <i>A variety of task types will allow more people to participate but also positively influence participation in government crowdsourcing initiatives.</i>	Task (Type)
(H5): <i>Having management, rules and controls in place will positively influence participation in government crowdsourcing initiatives.</i>	Management

(H6): <i>Providing feedback, and showing tangible results in the real world as a result of participation in government crowdsourcing initiatives will positively influence the decision to participate in similar initiatives in the future.</i>	Feedback
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While hypotheses three to six explore some aspects of system functionality, measuring the intention to use the platform is important as technology is the facilitator between government and citizens within a crowdsourcing system. As mentioned by Zhao & Zhu (in Seltzer & Mahmoudi, 2012) crowdsourcing consists of three components: 1) organisation (government), 2) crowd (citizens), and 3) the platform that links them together. It is therefore crucial to determine technology acceptance. The UTAUT is used to determine intention and acceptance to use an information system, and is an amalgamation of several other acceptance models into one. These include the Theory of Reasoned Action (TRA), the Theory of Planned Behaviour (TPB), Technology Acceptance Model (TAM), the Motivational Model, the Combined TAM-TPB, the Model of PC Utilisation, Innovation of Diffusion Theory, and Social Cognitive Theory (Anderson & Schwager, 2004). Two key constructs of UTAUT; Performance Expectancy (PE) and Effort Expectancy (EE) have a direct influence over of Behavioural Intention are of interest in this research. PE is mapped to hypothesis seven and refers broadly to perceived usefulness and the degree to which a person believes that the system will be beneficial.

Table 2. Hypotheses 7 and 8

Hypothesis	Factor
(H7): <i>The usefulness of the system will positively influence the intention to participate in government crowdsourcing initiatives and is moderated by age and gender, where it is stronger for men than for women, and would be stronger for younger users.</i>	Performance Expectancy
(H8): <i>The ease of use of the system will positively influence the intention participate in government crowdsourcing initiatives, and is moderated by age and gender, where it is stronger for women than for men.</i>	Easy to Use

In the UTAUT it is considered to be the strongest predictor of intention to use a technology

(Venkatesh et al., 2003). EE is mapped to hypothesis eight and is the “degree of ease associated with the use of the system” (Venkatesh et al., 2003, p. 450). Hypotheses seven and eight are shown in Table 2 above.

It is noted that both performance expectancy and effort expectancy will be moderated by gender and age (Venkatesh et al., 2003). Within the UTAUT these are both predicted drivers of intention to use the system, which is referred to as ‘Behavioural Intention’ in the conceptual model shown in Figure 5. The other factors which were derived from the literature review are also indicated as predictors of ‘Behavioural Intention’ in the model.

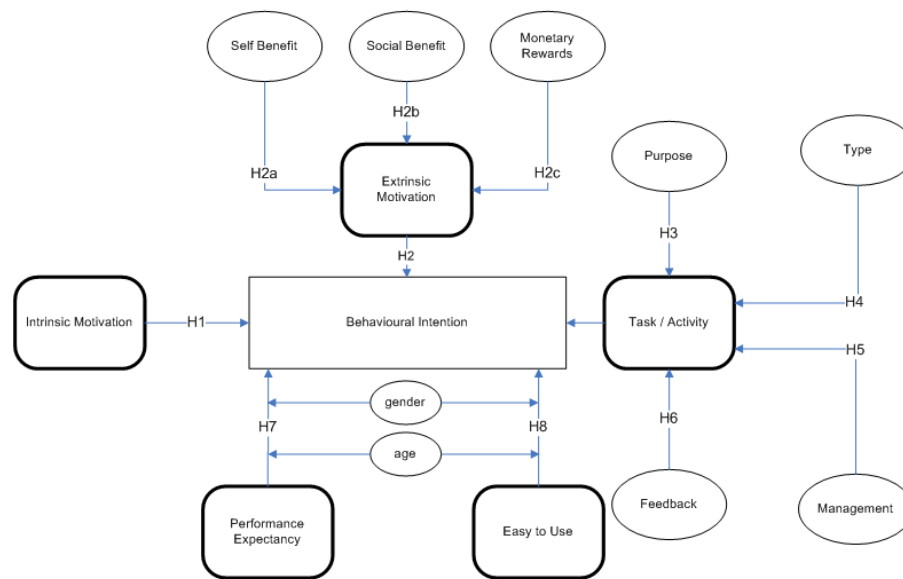


Figure 5. Conceptual Model

The factors in Table 1 and Table 2 are referenced in the conceptual model shown in Figure 5. The conceptual model presents the essential factors for an e-Government crowdsourcing initiative and shows the relationship between the factors mentioned above. It also serves as a blueprint for conducting the research, and as the measurement items for these factors were derived from reflective measures from previous studies, it also guided the selection of appropriate statistical tests.

2.8 Conclusions

The use of crowdsourcing have allowed some private sector companies to engage a large number of users external to their organisation in order to solicit ideas or help solve problems. Government failure to implement suitable mechanisms for technology-mediated participation, have left citizens to participate on platforms that may not be a suited to political engagement. Crowdsourcing could offer government a potential framework for implementing structured engagement with citizens. Technology-mediated participation however does need to be

properly implemented, and some guideline was given by reviewing the RTL framework which included considerations such as feedback and the implementation of policies and procedures.

Many crowdsourcing implementations use incentives to encourage participation. Some are tangible such as rewards, or intangible such as individual recognition. An awareness of individual motivation and how it could affect participation would allow for more directed and informed implementations of crowdsourcing. Other system-related issues such as careful planning and description of activities, the range of activities offered, as well as management and support can also affect user motivation to participate. The outcome of this literature review resulted in the development of a conceptual model, which is used to guide the research further.

3 Research Methodology

This chapter begins by describing the philosophical assumptions and the subsequent choices with regard to the approach, and the rationale for the methods selected. It then graphically maps out the strategy which includes the expected procedures and outcomes at each stage.

3.1 Ontology and Epistemology

Ontology relates to a position or view of the world being either that of objectivism or subjectivism. Objectivism sees entities as existing independently from social actors who do not influence reality, and espouses predictability across scenarios or situations. Subjectivism on the other hand places an emphasis on the continual creation of social phenomena as a result of the activities of social actors. This concept of a socially constructed reality stems from the interpretivist philosophy, where different actors have different perceptions because of individual views of the world (Saunders, Lewis, & Thornhill, 2009).

Epistemology is concerned with what is understood to be acceptable knowledge. On one hand, it may only consider observable events or facts as valid, with objects being separate to social actors. An alternative perspective seeks to unpack the deeper meanings behind events or phenomenon as affected through social actors. These predominant perspectives are that of positivism and interpretivism (Saunders et al., 2009).

The positivist philosophy adopts the objectivist ontology, with the emphasis on ‘facts’ and empirically collected data with the aspirations of repeatability and generalizability. It follows deductive reasoning comprised of steps using statistical tools to test hypotheses which prescribe relationships between variables or concepts (Saunders et al., 2009).

Interpretivists believe that reality is constructed and social actors not only build their own interpretations of the world, but also create interpretations of the actions of other social actors, and also implies researcher bias due to their own interpretations. An inductive reasoning approach is followed in order to build theory from the data collected through qualitative methods such as interviews, and are analysed for themes or patterns.

From an ontological point of view, positivism and interpretivism are on opposite ends of a continuum, being objective and subjective respectively. However another perspective believes in both an external (objective) as well as a socially constructed (subjective) reality, and that there are times when the researcher must stand back, and other times when they must interact (Tashakkori & Teddlie, in Saunders et al., 2009). From an ontological point of view such a design can include the mixing of objective (quantitative) and subjective (qualitative) methods, and can be both inductive and deductive depending on the goals and phase of the research.

3.2 Approach and Method

The underlying philosophy for a researcher adopting a mixed or combined approach therefore does not fit with either positivism or interpretivism. Pragmatism guides the choice to “what is best” in order to answer the research questions, which would include the use of multiple methods. Pearce (2012, p. 841) describes pragmatism as being “based on the principles of intersubjectivity (interplay between objective and subjective stances), abduction (combining both inductive and deductive theory building), and transferability (inferring the reach of various findings)”.

Mixed methods are not to be confused with a multi-method approach where although multiple data collection methods are used, the researcher still adopts a single world view, being either quantitative or qualitative (Saunders et al., 2009). A mixed-method approach not only embraces both quantitative as well as qualitative methods, but the researcher adopts multiple world views. The reason for using mixed-methods is that choosing either a quantitative or qualitative approach would not be able to satisfactorily answer the research questions. On the one hand quantitative methods are confirmatory and would allow for a broad perspective, whereas qualitative methods enable deep understanding, ideas and insight. The area of motivation itself contains aspects of internal as well as external regulation, and although a survey will assist with a broad understanding, it cannot answer deeper “why” questions.

Quantitative data collected via surveys are also ‘one-way’, whereas interviews allow for a two-way conversation, elaboration and further probing. Quantitative methods such as surveys require careful wording of questions in order to avoid ambiguity and redundancy, but even carefully crafted questions can be subject to participant interpretation.

3.3 Strategy

When approaching a mixed method design, Creswell (2003) suggests that the strategy choice is informed by answering some key questions concerning implementation, priority, and integration. Implementation involves a decision on whether a sequential or concurrent approach is followed, where a concurrent design entails quantitative and qualitative data collection and analysis being done in parallel. In a sequential implementation data is collected and analysed in stages, beginning with either quantitative or qualitative. Priority relates to the importance attached to either, quantitative or qualitative data collection, and the analysis process.

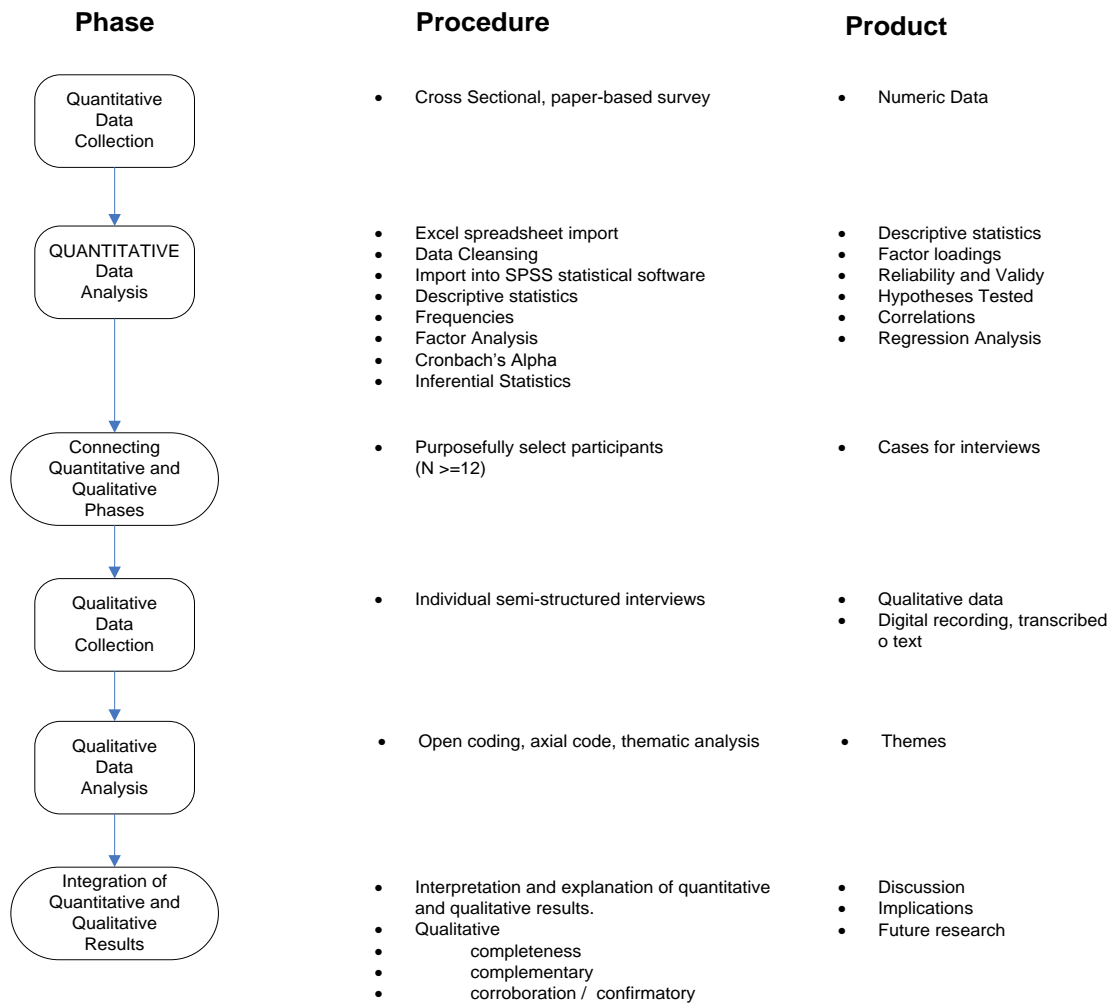


Figure 6. Visual Model for Sequential Explanatory Design Procedures

Exploratory studies begin with a qualitative phase, whereas an explanatory study begins with the quantitative phase, and a decision on the integration points of the quantitative and qualitative data also has to be considered. In a sequential design the results of the first phase may inform the data collection for the second phase, with a combined analysis at the end.

In this study a sequential explanatory design is adopted, which means that it will begin with a quantitative phase, followed by a qualitative phase. It seeks to first obtain a broad perspective through quantitative data collection and analysis, followed by a qualitative explanatory phase. A visual model for the research design, adapted from Ivankova, Cresswell John, & Stick (2006) is shown in Figure 6.

The value of the visual model is that it provides the researcher with a clear ‘roadmap’ of the steps to follow as well as the procedures and product (outcome) for each stage. It also indicates the priority and sequencing, as well as the integration points.

3.4 Population and Sample

The population originated from the Cape Town Metropolitan area which consists of just over 3.7 million residents (localgovernment.co.za, 2013). This information, along with the desired confidence level (95%) was entered into a sample size calculator and yielded an ideal sample size of 385 (Macorr, 2013). This study is cross-sectional as it was carried out in a fixed period between January and July 2014 (Saunders et al., 2009). It was acknowledged before that it would be challenging to obtain a representative sample within the constraints placed on this research. Electronic surveys were not viable because of unequal access to technology due to the imbalance in access to landline-based Internet, availability of mobile phone infrastructure and high mobile data costs, which still exclude the majority of the population (Bagui et al., 2011; Chigona et al., 2009).

The population includes both males and females over the age of 18 who reside within the greater Cape Town area. Although a probabilistic sample would have been desirable, it is sometimes not feasible or practically possible to do a random sample (Trochim, 2013). The sample cannot be considered to be truly representative and ‘definitive’ of the Cape Town Metropolitan area, but rather be taken as being ‘indicative’.

A maximum variation sample is a purposeful sampling technique used to “describe and explain key themes that can be observed” (Saunders et al., p. 239), and requires the capture of a wide range of perspectives. This could include the typical through to the extreme in order to gain understanding from different angles or viewpoints (Laerd, 2012). Data collection took place in a diverse range of areas such as Atlantis, Gugulethu, Delft South, Fish Hoek, Khayelitsha, Kraaifontein, Langa, Mitchell’s Plain, Wynberg, and Parow. Therefore the participants were sourced from a diverse range of backgrounds and experiences, which would allow the researcher to identify common patterns or themes out of this diversity.

The sample for the qualitative (interview) part of the study was randomly selected and typically qualitative samples rely on saturation, or until there are no more themes. In a study to determine “How many interviews are enough”, it was found that “saturation occurred within the first twelve interviews, although basic elements for metathemes were present as early as six interviews” (Guest, Bunce, & Johnson, 2006, p. 59). In this research, saturation was reached after ten interviews, with no new themes emerging in the remaining two interviews.

3.5 Instruments

A quantitative approach was adopted with a questionnaire consisting of the following sections:

- A. demographic information such as gender and age group,

B. a hypothetical narrative or ‘scenario’ of a proposed system, and

C. forty three questions that mapped to constructs defined in the conceptual model.

All questions from Section C were presented on a 5-point Likert scale : 1= *strongly agree*, 2 = *agree*, 3 = *not sure*, 4= *disagree*, and 5 = *strongly disagree*. Questions were either deleted, rephrased, or added to constructs after running two pilots.

Within the Cape Town area, of the languages used, 5.5% is either “Not Applicable” (sic), or is not one of the official languages. Sesotho accounts for 1%, with others such as isiZulu, Sepedi, IsiNdebele all accounting for less than 0.5% each. Afrikaans is understood by 34.9% of the population, IsiXhosa by 29.2%, and English by 27.8%, together totally 91.8%. Although it seemed prudent to translate the questionnaire from English into Afrikaans and IsiXhosa to be more inclusive data collectors only requested English and IsiXhosa questionnaires with the predominant request being for English. The questionnaire also included a scenario or short narrative that ‘paints a picture’ of use which put things ‘into perspective’ for participants. Scenarios simulate intention by telling a story. In this way they ‘imagine’ use while answering the questions (Carroll, 2000).

The mapping between the questionnaire and constructs in Section C of the questionnaire shown was given careful consideration as it plays a vital role in ensuring reliability and validity of the model, as the items must “reliably operationalize the key concepts detailed within specific research questions . . . and be relevant and acceptable to the target group (Rattray & Jones, 2005, p. 235). Table 3 shows the mapping between each hypothesis, factor in the conceptual model, and related questions which in most cases, were adapted for use in the context of this research

Table 3. Mapping questions to factors in conceptual model

Hypothesis	Conceptual Model Factor	Questions	Sources
H1	Intrinsic Motivation	1,2,3,4,5	(Amabile et al., 1994)
H2a	Self-Benefit	6,7,8,9,10,11	(Murcia et al., 2007)
H2b	Social Benefit	12,13,14,15	(Murcia et al., 2007)
H2c	Monetary Rewards	16,17,18	(Kauffmann & Schulze, 2011)
H3	Task (Purpose)	19,20,21	Self constructed
H4	Task (Type)	22,23,24,25,26,27	(Coelho & Augusto, 2008)
H5	Management	38,39,40	Self constructed
H6	Feedback	28,29,30	(Kauffmann & Schulze, 2011)
H7	Performance Expectancy	31,32,33	(Venkatesh et al., 2003)
H8	Easy to Use	34,35,36,37	(Venkatesh et al., 2003)
DV	Behavioural Intention	41,42,43	(Venkatesh et al., 2003)

The full survey instrument can be found in Appendix A.

The application of qualitative analysis to the quantitative data would allow for greater understanding, and Creswell (2003) advocates the use of multiple data sources for triangulation, or confirmation of information collected by different means (Saunders et al., 2009). It allows the researcher to confirm and clarify meaning and knowledge from the participant, “responses to be probed and topics discussed from a variety of angles” (Saunders et al., 2009, p. 327). Therefore twelve semi-structured interviews were also conducted and the outline of the questions can be seen in Appendix B.

3.6 Pilot Study

The first pilot survey consisting of a convenience sample of 12 participants (6 male and 6 female, in three age groups) in order to confirm that the wording of questions was appropriate. Some questions were highlighted as problematic, and a second pilot was run after some questions were either rephrased or removed.

The pilot surveys conducted were captured into Excel and data cleansed before being imported into SPSS. Cronbach’s alpha was used to determine inter-item consistency and highlight any ambiguity and / or redundancy

The semi-structured interview questions were also tested with two of the participants from the same group who completed the pilot survey. This is so that the interview ‘guide’ as shown in Appendix B could be verified and fine-tuned.

3.7 Process

To make data collection feasible across the large geographical area, and within the limited timeframe, quantitative data (questionnaire) collection was performed through the “Activator” network. “Activators” are carefully selected individuals who are included in a comprehensive three year programme involving personal and professional development (Activate Leadership, 2013). They are engaged in a wide range of projects which include education and youth as well as agriculture and rural development. By virtue of their association with the ActivateLeadership programme, “Activators” were considered to be far more reliable, dependable, and credible as data collectors than if individuals were randomly selected ‘off the street’. As the data collector network was spread over a large geographical area in and around Cape Town the paper-based questionnaires were distributed from an agreed central point. The data collectors all received a briefing as to the purpose of the research, capture protocol, and timescales for the return of the completed questionnaires. The expected minimum number of completed surveys per data

collector was between twenty and twenty five consisting of a minimum of 10 male, 10 female, equally in the age groupings of 18-23, 24-29, and 30 to 35, 36-45, 45+. The researcher also kept in contact with all data collectors during the collection phase in order to gauge progress, and data collectors were encouraged to ensure that they collected an equal number of participants within the gender and age groupings.

The completed questionnaires were returned to the researcher four weeks later and the researcher then proceeded to capture each questionnaire into an Excel spreadsheet. A single row in Excel represented a participant questionnaire. In addition to columns for each question response, additional columns were added for data collectors' code, as well as the unique questionnaire code. The unique questionnaire code assisted with geographical location, linking to the data collector, as well as spot checks for errors during the data capture process.

Once quantitative data analysis was completed, interview participants were randomly selected, and several options were also offered besides the usual face-to-face interviews, such as the use of instant messaging (IM) and other platforms such as WhatsApp and Skype. Participants were also assured of their anonymity, their right to terminate the interview at any time they wished, or refuse the use of their contributions. Interviews began with a brief outline of the nature of the research as well as the expected length which was between twenty and thirty minutes. Participants were asked permission for the interview to be recorded, failing which, the dialogue would be hand-written by the researcher. An outline of the interview questions can be seen in Appendix B. All qualitative data was imported into Weft DQA, which was also used to extract the dominant themes.

3.8 Quantitative Data Analysis

An important aspect to check before conducting factor analysis or regression is the inter-correlation between variables which range from 0 (no correlation) to 1 (perfectly correlated – also known as singularity). Problems arise if the correlations are either too high (more than .8), or not high enough (less than .3). Removal of variables if the correlations are low is subjective and possibly irrelevant when conducting factor analysis where, with large sample sizes would mean that smaller values could actually turn out to be significant. Of great importance is to note when variables are also too highly correlated (multi-collinearity) or singularities, as they affect both factor analysis as well as regression (Field, 2009).

3.8.1 Validity

“Validity is concerned with whether the findings are really about what they appear to be about” (Saunders et al., 2009, p. 157), with internal validity being concerned with the quality of questions (content) and whether they accurately measure what is expected. Content validity

enquires whether the proposed questions measure what they are meant to, and if they can be considered reliable enough for accurate predictions (Saunders et al., 2009). Sets of questions form constructs of the conceptual model which was in turn derived from a review of the literature. Although there is an absence of any clearly defined method of confirming content validity as it is “judgmental and highly subjective”, it is highly recommended (Straub, Boudreau, & Gefen, 2004). To this end, the questions were tested by running two pilots, with the first pilot resulting in the rephrasing of several questions. Cronbach’s alpha can be used to measure inter-item consistency between the specific items considered to be a part of a construct defined in the conceptual model. The exact range of the alpha measurement is debatable and depends on the type of research being conducted. Values higher than .7 have been cited as being desirable, but for social science research it is common to accept much lower values starting from .6 (Hair, Black, Babin, & Anderson, 2010)

Factor analysis is a method that can be used to determine if sets of questionnaire items are related to the constructs they are supposed to measure. This tests the validity of the constructs and analysis for item reduction through grouping, hence the importance placed on inter-item correlation before. The assumptions for performing certain statistical tests such as Factor analysis requires a minimum sample of 100. The suitability of using factor analysis can be checked using the Kaiser-Meyer-Olkin (KMO) test. Values range between 0 and 1 with those closer to 1 being more desirable, a value of .5 is considered as barely acceptable, .5 to .7 as mediocre, .8 to .9 as great, and above .9 as superb (Field, 2009).

Rotation is typically applied to data in factor analysis as it assists in interpretation, compared to data where no rotation has been applied. Varimax (orthogonal – 90 degree rotation) is widely used, as it results in more easily interpreted results. The level of component extraction can be determined Kaiser Criterion, which is expressed in Eigen values. These values are the amount of total variance explained by the extracted component. Values over 1.0 or more indicate common factors (Suhr, 2006). Another common technique that can be used to confirm factor extraction is evaluation of a scree plot, which is a visual representation of the factor variance. The decision to retain the full set of variables extracted for one factor however is also based on the interpretation of the meaning attached to specific questions. Some may load together onto a factor but share different conceptual meanings, be sub-components of another construct, or be a different construct altogether.

With regard to external validity, as described before, this research does not draw on a representative sample so it does not propose that the results will be generalisable to the Cape Town Metropolitan area.

3.8.2 Reliability

Reliability can be viewed from the perspective of being repeatable and consistent (Venkatesh et al., 2013), and the lack of reliability also means a lack of validity. It is concerned with how closely individual items together can be considered to be representative of a construct in the model. One technique is that of split-half testing which produces a reliability coefficient from the average of scores correlated from the division of sample into sub-samples. This method is prone to error, where the outcome is dependant on how the splits are done, however the results do approximate another method, that of Cronbach's alpha, if enough different splits are made (Nunnally, in Straub et al., 2004) . Another method is test-retest, where a questionnaire is performed by the same sample groups on two different occasions to test whether very similar results are achieved (Rattray & Jones, 2005). This method was not practical or easy to operationalise within the context of this research. The most commonly-used method to test internal consistency is that of Cronbach's alpha, and is what was used in this research.

Single items would not be considered as valid or accurate as measures of a construct, hence several questions were 'assigned' to a construct on the questionnaire. After confirming the reliability of the items to form the construct, the mean is calculated. This resulting composite value is what is used in further tests.

Regression analysis can be used to show the effect of independent variables over a dependent variable individually, and together (Taylor, 2010). Multiple regression involves observing the effect of multiple independent variables over the dependent variable. This produces a single model, but other techniques such as stepwise and hierarchical regression produce different models that can be evaluated. Hierarchical regression is used when there is some past reference or basis for entering certain constructs into the model first. So known predictors from other research would be entered first, followed by a 'new' predictor. Stepwise regression essentially leaves the decision regarding the order in which the variables are inserted into the regression equation up to mathematical calculation. Although generally frowned upon because the researcher has no control over the process, stepwise regression may be the only option in cases where no previous theory is available (Field, 2009).

3.9 Qualitative Data Analysis

As a mixed method approach will be adopted, different techniques will be used during the analysis phase. A mixed-method approach provides the opportunity for richer descriptions of the data, confirmation through triangulation as well as other inferences as opposed to only one approach being used. It therefore goes some way to balance "contextual accuracy and generalisation" (Morgan, in Pearce ,2012).

Table 4. Purpose of Mixed Method Research (Venkatesh et al., 2013)

Purposes	Description	Illustration
Completeness	Mixed methods designs are used to make sure a complete picture of a phenomenon is obtained.	The qualitative data and results provided rich explanations of the findings from the quantitative data and analysis.
Complementarity	Mixed methods are used in order to gain complementary views about the same phenomena or relationships.	A qualitative study was used to gain additional insights on the findings from a quantitative study.
Corroboration/ Confirmation	Mixed methods are used in order to assess the credibility of inferences obtained from one approach (strand).	A qualitative study was conducted to confirm the findings from a quantitative study.

Venkatesh et al. (2013) described seven reasons for conducting mixed-method research, with the three relevant to this research shown in Table 4. This also assists in directing the outcomes or the purpose of qualitative data analysis. Although the primary purpose of this study is that of completeness, it will also assist with complementarity, and corroboration / confirmation.

The purpose is not to induce theory, but rather to gain a holistic view of the situation. Interview participants would be able to give rich descriptions and explanations of the data collected in the quantitative phase. Validity of this study can be achieved particularly since the interviews are conducted using semi-structure questions.

3.9.1 Credibility

As opposed to the terms reliability and validity as is used in quantitative research, McMillan & Schumacher (in Bashir et al., 2008) suggest rather that the goal should be to attain a high level of “agreement” between the real world and the explanations of the phenomena. In this regard, triangulation is considered to be a good strategy, and helps to improve reliability and validity. Triangulation refers to the use of different data collection techniques within the same study (Saunders et al., 2009). To this end the qualitative phase of this study serves to corroborate or confirm the quantitative results. Member checking has been suggested as another way of verifying the data, and Creswell (2003) also suggest that an external entity review the themes and interpretations found by the researcher. Unfortunately these methods may not be logistically possible in this study due to time and resource constraints.

3.10 Ethics and Consent

Several ethical concerns need to be taken into account during the entire research lifecycle. Concerns over participant privacy and confidentiality, consent and scope of their voluntary participation need to be taken into account. This also includes data protection measures to ensure the confidentiality of participants (Saunders et al., 2009).

Individuals were in no way coerced into participating in the research. Furthermore their privacy was respected as there was no further intrusion into or gathering of information on, or from participants beyond that of what was required for the research. Participants also were not required to reveal any personal information, and were informed that they could remove themselves from the process at any point.

Similarly, interview participants were assured of their anonymity, and that they could choose not to be recorded, quit the interview, as well as deny the researcher the use of any contribution they had made. Measures were also put in place to ensure the confidentiality of information shared by participants. The interviews were transcribed by a third-party and so doing, the audio files provided for transcription did not include any references or provide any means of identifying participants. Any reference to participants in this dissertation was anonymised through the use of an arbitrary alpha-numeric code.

Consent was required at various stages during this research. As the quantitative data required access to a range of participants in various areas, a third-party was selected to assist with data collection. Ethical issues therefore needed to be considered as a third-party was used. Initial consent was obtained from the ActivateLeadership management in order to utilise their “Activator” network. “Activators” were also remunerated for collecting data but this was not considered to influence their integrity, as their selection into the ActivateLeadership Programme is a reflection of their ethics, commitment and passion to make a difference as active citizens.

3.11 Conclusions

This chapter described the overall research approach, and the strategy adopted. It provided an explanation of quantitative and qualitative approaches, as well as the reasons for adopting a mixed-methods approach. The context of the research was also related through a description of the population and sample. This section also described how the questionnaire mapped to the proposed conceptual model, and how the questions were verified through pilot studies. An account of the data collection process was also given, along with the rationale behind the choice of a specific group of data collectors. Various data analysis techniques were also described, before concluding with a discussion of ethics and consent.

4 Analysis and Findings

4.1 Sample Data

The total number of questionnaires collected was 307, but only totaled 295 after those with a large number of unanswered questions (over 50%) were excluded. A total of Twelve data collectors administered the questionnaires based on the protocol sheet which added some structure. Figure 7 shows that while there was roughly an equal gender split, the number of participants decreased as age increased. The lack of parity in data collection across different age groups was possibly due to a combination of the relative age of the data collectors and their contact with different age groups based on their individual outreach projects.

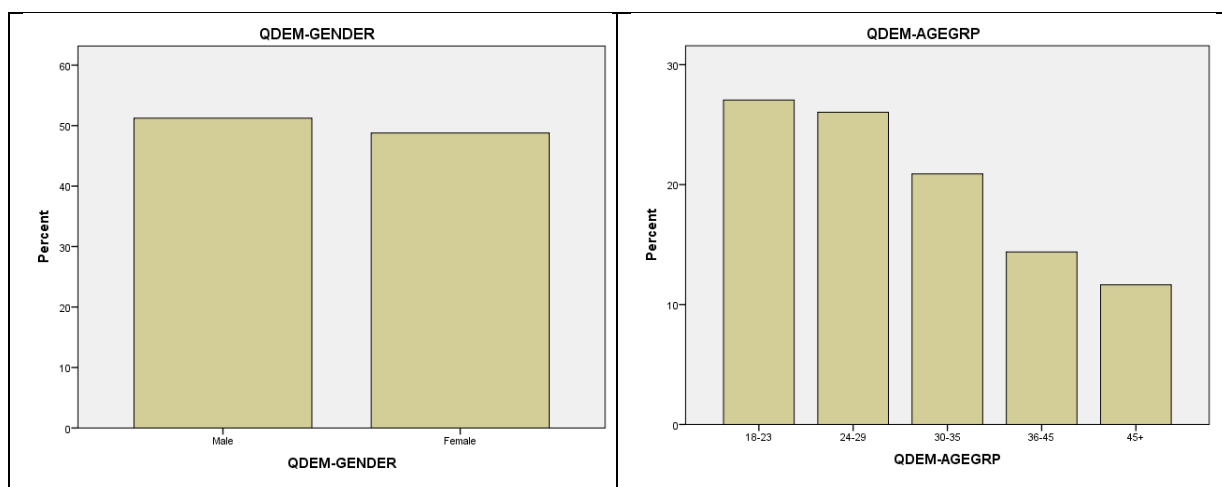


Figure 7. Gender and age distribution

4.2 Preliminary analysis

Viewing a Pearson correlation matrix showed weak but mostly positive correlations, with only a few being negative. Many of the correlations could be considered as weak or small ($\leq .3$), or moderate (0.4 to 0.6) according to scales presented by Dancey & Reidy (2004) and others, however Buda & Jarynowski (2010) note that as there is no accepted 'standard' these should merely serve as guides. Amongst the few negative correlations, one to be noted was that between question 17 and both questions 42 ($r = -.012$) and 43 ($r = -.080$). The significance of this is that questions 42 and 43 are part of a set of questions that relate to the dependent variable 'Behavioural Intention'. Question 17 was part of a set of questions that explored payment for participation. The other questions (16 and 19) that formed part of this construct also showed very low correlations (question 16 = .034, question 19 = .006) with the questions linked to the dependent variable. This negative correlation was confirmed in later analysis.

4.3 Reliability and Validity

As previously mentioned in the chapter on research methodology, checking reliability and validity is essential before proceeding with data analysis. Statistical methods were used in this regard with internal validity being checked using factor analysis to verify validity (Rattray & Jones, 2005) and Cronbach's alpha to test inter-item consistency.

4.3.1 Factor Analysis

Analysis was carried out using varimax rotation, and components were extracted with Eigen values greater than one. Pairwise exclusion was used to minimize the exclusion of too many cases. A KMO of .87 as well as a highly significant ($< .0001$) Bartlett's test of sphericity confirmed the appropriateness of factor analysis, and the communalities were all above the .3 level. According to Stevens (in Field, 2009) only factor loadings above .4 should be interpreted and after preliminary analysis, questions 6 and 11 were below this threshold. Both were part of a six item construct defined in the conceptual model and removing them also resulted in an increased Cronbach's alpha value for that construct from .72 to .74. The analysis was then rerun with these items excluded, and showed that variance ranged from 9.3% for component one down to 3.6% for component ten, and together all items explained 61% of the total variance.

Overall, questions grouped to describe constructs of the conceptual model displayed a good fit with the components extracted, with only a few irregularities. The items for factor one included the full set of questions for Hypothesis 3 (Task Purpose) and Hypothesis 5 (Management) which were both indicated as sub-components of Task / Activity in the original conceptual model. Both address the 'system', one with how the user would perceive interacting with the system, and the other the user expectation of management, control, and rules. One question (question 22) from Hypothesis 4 (Task Variety) also loaded highly onto factor 1 and the content of the question made sense that it be retained as part of this factor.

Factor 2 showed loadings from two sub-components of a construct explained in the conceptual model containing the complete sets of questions from both. These both related to different aspects of extrinsic motivation, one being 'Self-Benefit', and the other being 'Social Recognition', so it is understandable that they did load together as they are closely related and sub-components of the same construct in the conceptual model. As they were two distinct components, a decision was made to split them as per the original conceptual model into 'Self Benefit' and 'Social Benefit' items. Items related to 'System Usefulness' loaded onto factor six, but also included a question (question 23) which was originally conceived as part of a different construct in the conceptual model, which was retained as part of the factor after

reviewing the content of the question. Four items that were part of ‘Task Types’ in the conceptual model split into factor 9 (questions 24 and 25), and factor 10 (questions 26 and 27).

4.3.2 Composites

As a result of the factor analysis, the following composite values were generated by combining and averaging the questions that make up the construct. The Cronbach’s alpha value for “Few skills, just vote” was very low at only .48 so although it is included, it’s validity as a measure is questionable. Besides one other factor with an alpha value of .68, all other values were $>.70$. While some analysis indicated that the removal of some items would increase the alpha value, the decision was made to retain those questions after determining that item-total correlation values were all $>.30$ (Field, 2009).

Table 5. Composite Statistics

factor		N	M	SD	Skewness	Kurtosis	Cronbach's		
					Std.	Std.	Alpha		
					Err.	Err.			
1	Support and Management	265	1.65	0.56	1.30	0.15	2.66	0.30	.84
2	Self Benefit	278	1.99	0.71	0.41	0.15	-0.42	0.29	.74
3	Easy To Use	265	2.04	0.73	0.30	0.15	-0.23	0.30	.81
4	Feedback and Results	291	1.64	0.70	1.57	0.14	3.42	0.29	.78
5	Monetary Rewards	291	2.44	1.15	0.64	0.14	-0.59	0.29	.85
6	Performance Expectancy	290	1.85	0.65	0.90	0.14	1.63	0.29	.73
7	Intrinsic Motivation	280	1.82	0.60	0.94	0.15	2.24	0.29	.68
9	Have skills and Ideas	283	1.78	0.77	1.23	0.15	2.22	0.29	.72
10	Few skills, just vote	282	2.26	0.89	0.45	0.15	-0.19	0.29	.48
11	Social Benefit	286	2.24	0.82	0.60	0.14	0.33	0.29	.71
8(DV)	Behavioural Intention	284	1.77	0.68	0.79	0.15	0.81	0.29	.72

Table 5 shows some descriptive statistics for the composite scores generated, as well as Cronbach’s alpha scores for each. ‘Monetary rewards’ has a standard deviation over one of 1.14, while all other items were below one standard deviation, indicating that the mean is a good representation of the sample data (Field, 2009). ‘Support and Management’ and ‘Have skills and Ideas’ were mildly skewed with values of 1.3 and 1.2 respectively, and all fell within the -3 to +3 range for kurtosis (Hair, Black, Babin, & Anderson, 2010) with one exception. ‘Feedback and Results’ is highly skewed with skewness of 1.57 and kurtosis of 3.42. ‘Have skills and Ideas’ and ‘Few Skills, Just Vote’ would need to be expanded with some additional items to improve internal consistency, especially in the case of ‘Few Skills, Just Vote’. The split between simple / complex participation ties in well with crowdsourcing types shown in Figure 2, which allow for a variety of ways to participate, from simple voting through to more

complex collaboration. The RTL framework presents many different modes of participation from ‘readers’ to contributors, collaborators, and leaders.

4.4 Regression Analysis

Initial investigation indicated four extreme outliers that exhibited great influence over the equation, hence they were removed and the regression was rerun without them. The result of adding all the independent variables (predictors) using the ‘Enter’ method in SPSS is shown in Table 6.

Table 6. Regression Model Coefficients

	Unstandardized Coefficients		Standardized Coefficients	t	Sig.
	B	Std. Error	Beta (β)		
(Constant)	.17	.17		1.00	.318
Support and Management	.24	.09	.19	2.59	.010
Easy To Use	.17	.06	.19	2.85	.005
Performance Expectancy	.17	.08	.15	2.19	.029
Feedback and Results	.15	.07	.15	2.14	.034
Social Benefit	.06	.06	.08	1.13	.260
Intrinsic Motivation	.09	.07	.08	1.25	.214
Self Benefit	-.09	.07	-.09	-1.34	.182
Monetary Rewards	-.06	.03	-.10	-1.75	.081
Few skills, just vote	.09	.04	.12	2.11	.036
Have skills and Ideas	.05	.06	.06	.87	.383

A violation of the assumption of homoscedasticity would be problematic, but the scatterplot in Figure 8 only indicates some deviation hence the significance and confidence intervals should be near the expected values (Cohen et al., 2013). We are primarily concerned with the fit of the model and as such heteroscedasticity, or unequal variance “does not affect the most important aspect of a regression model, which is the form of the predictor $X\beta$ ” (Gelman & Hill, 2007, p. 46).

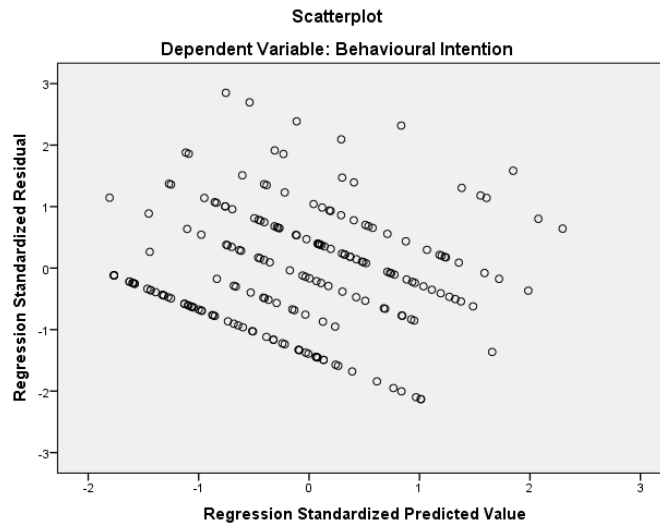


Figure 8. Standardised Residuals vs Predicted Values

In

Figure 9 the residuals histogram indicates a roughly normal distribution and the residuals P-P plot shows residuals to generally be linear and clustering around the trend line, thus normality was assumed. A backward stepwise regression was also run to explore other possible models. One other model shared the same adjusted R^2 value as the original model, but with other models not indicating any significant improvement the original model was retained.

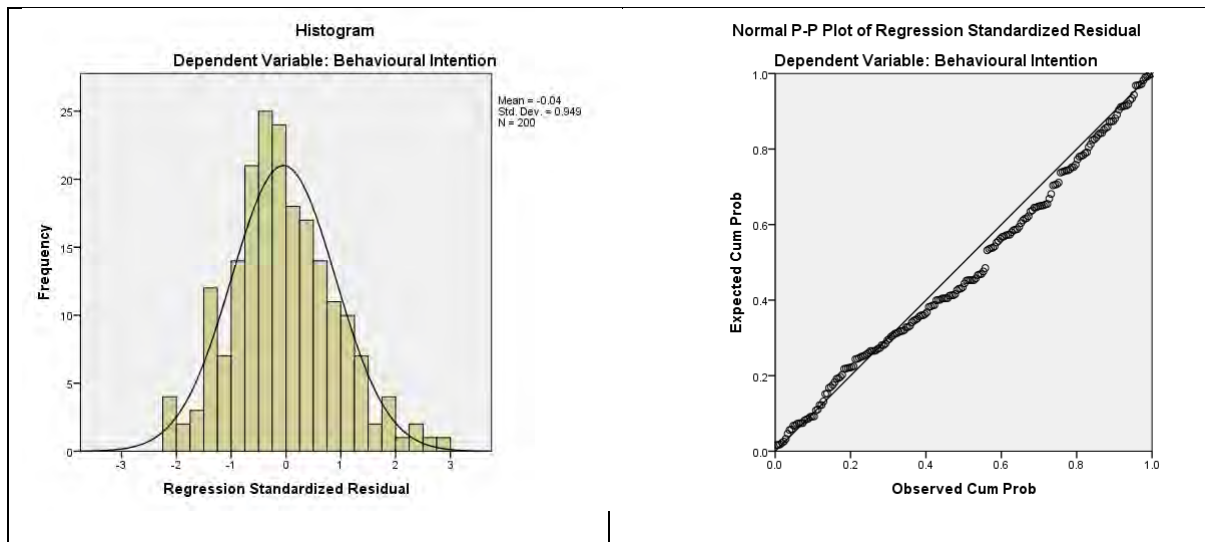


Figure 9. Residuals Histogram and P-P Plot

The coefficients in Table 6 indicate four significant predictors with the greatest contributions being ‘Support and Management’ ($t(229) = 2.6, p < .05, \beta = .19$) and ‘Easy to use’ ($t(229) = 2.85, p < .01, \beta = .19$), followed by ‘Performance Expectancy’ ($t(229) = 2.19, p < .05, \beta = .15$), and ‘Feedback and Results’ ($t(229) = 2.14, p < .05, \beta = .15$).

All relationships were positive except for ‘Self benefit’ ($t(229) = -1.34, \beta = -.09$), and ‘Monetary Rewards’ ($t(229) = -1.75, \beta = -.10$). Although the ‘Few Skills, just vote’ construct was also significant ($< .05$), it must be noted that it has very low internal consistency (Cronbach’s Alpha = .48) and would need to be relooked in a revision of the model.

The final model only accounts for 32.6% (adjusted $r^2 = .326$) of the variation in ‘Behavioural Intention’ and thus explains very little. Ordinarily only significant predictors would be retained in a final model leaving only a few constructs. As this is an emerging field of research, parsimony is not the intention and all model constructs were retained. Retention or rejection of constructs is deferred to future research and refinement of the model. Hence, even though ‘Monetary Rewards’ and ‘Self Benefit’ are negatively correlated to ‘Behavioural Intention’ they are retained. A revised model along with standardized β coefficients is shown in Figure 10, and also reflects the removal and addition of some constructs as a result of the factor analysis.

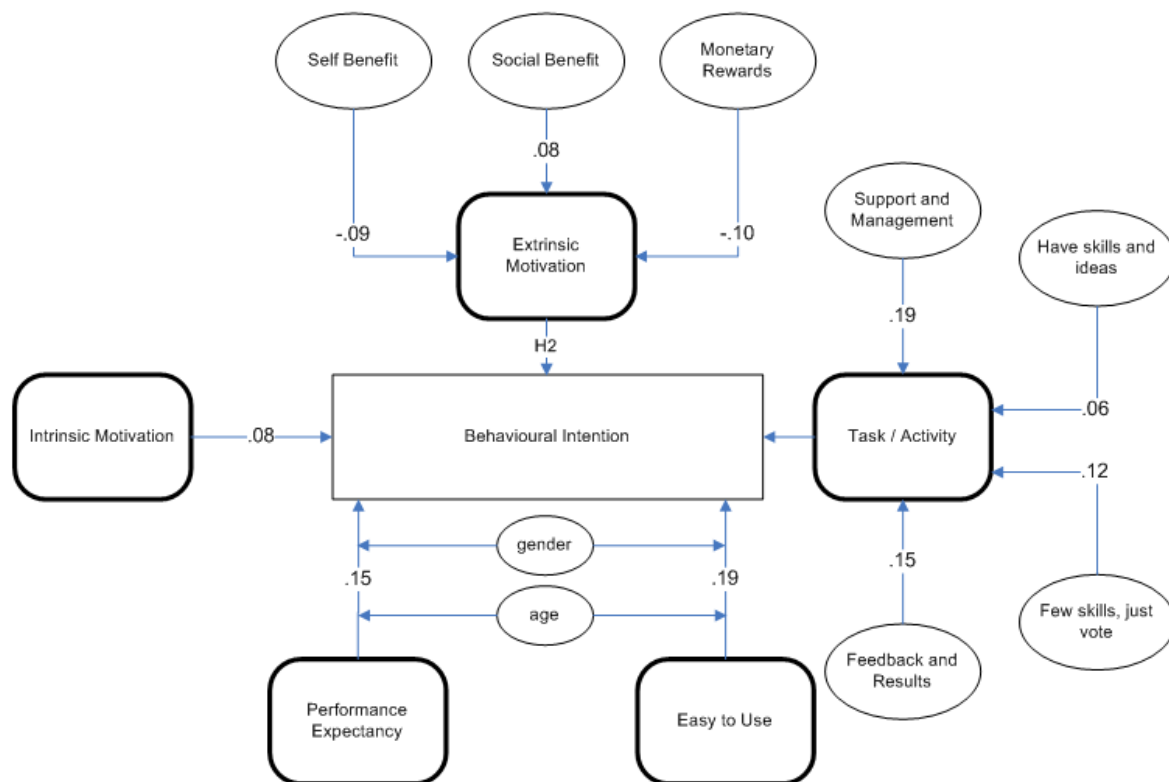


Figure 10. Revised Model after Analysis

4.5 Hypothesis Testing

Table 6 indicates a significant and positive relationship between ‘Performance Expectancy’ and ‘Behavioural Intention’ ($p = .029, \beta = .15$), as well as a significant and positive relationship ($p = .005, \beta = .19$) between ‘Easy to Use’ and ‘Behavioural Intention’. Hypotheses six and

seven were supported with p values < .05, and also worth a mention is hypothesis2c, Monetary Rewards (p = .081), which was close to the .05 cutoff for significance.

Table 7. Hypotheses Results

Hypothesis	Supported
(H1): <i>Intrinsic motivation will positively influence the intention to participate in government crowdsourcing initiatives.</i>	NO (p =.214)
(H2a): <i>Self-interest and upholding self-image will positively influence the intention to participate in government crowdsourcing initiatives.</i>	NO (p=.182)
(H2b) : <i>Social benefit is positively associated with the intention to participate in government crowdsourcing initiatives.</i>	NO (p=.260)
(H2c): <i>Monetary reward(s) will positively influence the intention to participate in government crowdsourcing initiatives.</i>	NO (p=.081)
(H6) : <i>Providing feedback and showing tangible results in the real world as a result of participation in government crowdsourcing initiatives, will positively influence the likelihood of participation in similar initiatives in the future.</i>	YES (p=.034)
(H7) : <i>The usefulness of the system will positively influence the intention to participate in government crowdsourcing initiatives and is moderated by age and gender, where it is stronger for men than for women, and would be stronger for younger users.</i>	YES(p=.029)
(H8) : <i>The ease of use of the system will positively influence the intention participate in government crowdsourcing initiatives, and is moderated by age and gender, where it is stronger for women than for men.</i>	Partial(p =.005)

The original hypotheses three (Task Purpose), and five (Management) were dropped as factor analysis indicated that they measured a ‘similar concept’, which was understandable upon reviewing the questions for each, so their questions were combined to form a new construct called ‘Support and Management’ which revealed a significant and positive (p = .010, β = .19) relationship with ‘Behavioural Intention’.

Hypothesis four (Task Type) was also dropped, but as a result of factor analysis was ‘split’ into two new constructs, one being ‘Have skill and ideas’, and the other, ‘Few skills, just vote’. This also affects the revised model as was shown in Figure 10. Hypothesis eight (‘Ease of Use’) is partially supported, as the moderation result (reported below) for both age and gender were not significant.

4.5.1 Moderators

Moderation tests were carried out by first ‘centering’ the relevant independent variables before creating new interaction variables. To test moderation, hierarchical regression was run with step one including the independent variables, and step two including the interaction variable. The result of ‘Easy to Use’ X gender did not produce significant results, so gender did not appear to be a factor when it comes to ‘Easy to Use’. However Performance Expectancy X Gender was significant ($t(272) = 3.80, p < .001, \beta = .20$), being greater for males than for females. There was no significant difference with Easy to Use X any Age Group, but it was significant when observing Performance Expectancy X any Age Group. The groups 18-23, 24-29, and 36-45 were all significant ($p < .05, \beta = .53$), followed by 45+ ($p < .05, \beta = .45$), and 30-35 ($p < .05, \beta = .39$).

4.6 Discussion of Findings

Whereas the results of the survey helped to refine the conceptual model presented in Figure 10, the qualitative data obtained from the semi-structured interviews provided deeper explanations. This mixed method approach improved reliability and validity, with the qualitative data confirming some of the quantitative results, which further validates the proposed model. This section describes these connections by combining quantitative and qualitative results, as well as linking to relevant references in literature.

Interviewee participants were randomly selected and all interviews were conducted by the researcher. All interviews were conducted in English and was problematic in one case where there was a need to use an interpreter. Interviews were conducted using a variety of methods which included face-to-face meeting, skype (recorded audio), skype (text - typing), WhatsApp (instant messaging - text). Some recorded audio was transcribed by the researcher, and some by a third-party transcription service. Information of the interview participants is shown in Table 8.

Table 8. Interviewees

Code	Gender	Agegroup	Code	Gender	Agegroup
M1	M	30-35	F5	F	36-45
F1	F	18-23	M2	M	24-29
F2	F	24-29	M3	M	18-23
F3	F	45+	M4	M	24-29
F4	F	45+	F7	F	36-45
F6	F	30-35	M5	M	24-29

4.6.1 Motivation

Citizen motivation to participate in government is low when it comes to voter turnouts, and even lower when it comes to ongoing political participation. While this is typically labelled as apathy, it could also be called citizen ‘amotivation’, or the lack of intention to act (Ryan & Deci, 2000).

Interviewees provided several reasons for non-participation but this does not indicate that they are disinterested. Rather, there are obstacles to participation, some of which are related to inadequate participation mechanisms, and others to citizen negative perceptions of the political process. Many interviewees expressed disillusionment with the current participation process by saying things such as, “I don’t think it will make a difference...just a very, very small difference”, or “not thinking it will make a difference” (M1) which, is labelled ‘amotivation’ in SDT (Ryan & Deci, 2000). Besides the lack of notification about meeting, interviewees also mentioned that they currently did not feel that they were competent enough to participate, or that the process was ‘orchestrated’, hence they did not feel like they could influence the process in any way.

The challenge is to move citizens from their current state of amotivation. Motivation is often simplistically split into only intrinsic and extrinsic types. The results of the intrinsic motivation measure should not be seen as a confirmation of the widely held belief of citizen apathy, and the weak ($\beta = .09$) relationship to Behavioural Intention may be an indication that measures used in this research are not appropriate for use in a political participation context. The results from the survey measuring intrinsic motivation bear no resemblance to findings in studies of private sector crowdsourcing, where the typical measures are that of ‘fun’, or ‘being interested’.

Although intrinsic motivation could be seen as the ideal, it is not possible to affect directly, hence crowdsourcing initiatives make use of external regulation or motivators.

The SDT continuum is useful in that it provides a more rounded understanding of external regulation as it pertains to extrinsic motivation. It assists in the understanding of what would motivate different individuals and what needs to be done to move along the continuum, since according to SDT the different forms of external regulation have different ‘triggers’. Some individuals may initially just respond to social pressure to participate or what is called introjected regulation in SDT. Others would participate because they understand the importance of what their contribution would be for the community, also known as integrated regulation in SDT.

With regard to the sub-components of extrinsic motivation, the model indicates a negative relationships between ‘Self-Benefit’ and ‘Monetary Rewards’ with ‘Behavioural intention’, and a positive relationship between ‘Social Benefit’ and ‘Behavioural Intention’. This appears to imply that participants would participate because they are altruistic, and not in it for self-gain. The survey results also indicated that both financial Incentives as well as self-benefit were negatively related to Behavioural Intention. This was confirmed as most interviewees expressed disinterest in monetary or self-gain, in favour of benefits for the community. There was agreement with a sentiment expressed by (F5) that, “I would rather prefer to be an honest citizen and give the best there is to the community”. It could be that social desirability bias affected the responses to what they thought was acceptable or expected by the researcher.

However as indicated in the literature, a combination of incentives is often required in crowdsourcing systems. Some people may be driven to assist the community and would help regardless, while others may require some sort of recognition, and / or prefer financial rewards. Some comments indicated complete opposition to incentives of any kind: “I think that, the fact that you can actually force your opinion, should be the incentive” (M5). For M1 offering financial rewards would affect the integrity of the system, and said, “If you asked me / offered me a monetary option, I wouldn’t take it less seriously...I would see it as a marketing thing and I would ignore it completely”.

While interviewees in general dismissed financial incentives, two out of the twelve interviewees did not discount the need for an incentive of some kind. According to Bayus (2013), the size of the incentive is not important and will not determine the validity or affect the quality of solutions or outcomes. The implementation of financial incentives could therefore be such that it could offer the necessary encouragement for some, while being small

enough so that financial rewards would not create a negative impression of the system for others.

Although it was not significant in the model, SDT further explains the positive ‘Social benefit’ construct where participants seek to have a ‘sense of belonging’ or ‘relatedness’ with a group. It should also be noted that self and social motivations are not mutually exclusive as, “the decision to participate in politics may be motivated by both a desire to make things better for everyone (altruism) and a desire to specifically acquire as many benefits as possible for an ingroup (social identification)” (Fowler & Kam, 2007, p. 816). An example of the ‘cross-over’ between self and social motives was communicated by one interviewee who said that he would willingly assist the community but did not want any financial rewards. Instead, he would prefer some public recognition if an idea that he had posted was selected as the preferred solution. As support and management, feedback and results, and task design are all able to influence individual motivation, cognisance of SDT during platform implementation is essential.

4.6.2 Support and Management

Support and management was shown as one of the drivers in the model. The creation of the platform entails the implementation of agreed rules and policies that would facilitate trust between participants as well as in the system (Leimeister et al., 2009; Preece & Shneiderman, 2009). Failure to implement these would “destabilize an online community and interfere with the problem solving abilities of the crowd” (Brabham, 2009, p. 257).

Management is not about control, but rather the facilitation of processes and guiding the crowd towards the desired outcomes. Guiding citizens through the process and moderating contributions is vital as M3 described his experience on another platform “where people...are gossiping about each other and stories going around ... and there is no control over it”, and also mentioned that comments just continued to pour in for weeks after the discussion was already over. Many of these discussions take place on social networks, but participation on unmanaged platforms such as Facebook can result in a loss of control (Cobo, 2012). “What I hate about Facebook ... comment ends up between two or three people or a group ... someone may misunderstand completely and turn the whole thing” (F1). Other interviewees also mention that, “code breakers hacks your profile, pretending to be you” (F2), and it is “so easy to abuse a system like Facebook.” (F1).

Interviewee experiences on other online platforms also raised concerns over personal safety and privacy. While technology could allow for more opportunities to participate, it also needs to allow for a place where “we can have more options to voice our opinions, where we won't be (judged)” (M4), and “people don't want to be seen, saying stuff” (M3). M3's perspective

stemmed from his experiences of intimidation at physical meetings as well as observations of some ‘disruptive’ online discussions. Hence he was very much in favour of the option to be anonymous. Policies and rules come into play here to set boundaries for engagement and therefore need to be enforced to ensure ongoing user engagement. The sentiment echoed by most interviewees was for a separate system in favour of using any existing systems. M1 mentioned that using a social medial platform would not be his first choice and that he would prefer a separate ‘political’ tool as it would allow for more control over issues concerning safety and security where interacting with the platform. Interviewees also mentioned that it was best managed by government instead of being privately run, with F1 considering government to be the “the lesser of the two evils”.

Part of system administration should also cover aspects such as clear communication of the purpose of a campaign, and a “detailed document to brief the community” (F5). Interviewees were also in favour of clearly defined processes or steps with fixed timeframes, “You laid it out on a piece of paper ..., these are the things that you can do and this is how you could help or this is how you could get involved” (F2). Providing a framework for support and management increases internalisation and feelings of competence and autonomy. These are further improved through structures that allow for open communication between government and citizens, as well as between citizens.

M1 mentioned that by interacting on the platform, “you might (also) educate people. If somebody thought that's (something was) a really good idea, they go on and see, actually there was a better idea from someone else”. Encouraging mentorship would also be important as according to Vassileva (2003), help and assistance from community members plays a crucial role in keeping people motivated to participate. This notion of mentorship is also supported in the RTL framework where ‘leaders’ act as mentors to new members. This is particularly important as online communities typically lack the socialisation processes witnessed within organisations (Hsieh, Hou, Chen, & Truong, 2013). It is during the initial ‘socialisation’ that a mentor could guide new members through system use, and newcomers could also be made aware of policies and procedures.

4.6.3 Feedback and Results

‘Feedback and results’, as with ‘Support and Management’ also showed a strong, positive relationship with ‘Behavioural Intention’. Feedback could take the form of a broadcast to everyone, or to an individual participant, and it should be noted that amotivation could result if there was either negative, or a lack of feedback (Elliot & Dweck, 2005).

While the results of the survey indicated that feedback was vital, the expectations regarding

the kind of feedback was provided by interviewees. Referring to current mechanisms, M1 remarked that “At the moment, I feel there is no feedback process”. F1 stated further by saying, “they ask you personally to comment and then you write your comments in and then once you've submitted your comment that's then gone...someone on the other side must read it”. Some acknowledgement is required as M1 states, “when they ask us questions and someone actually listen to the answer. They don't have to accept it, but they should take it into account”. Unsurprisingly, all were in favour of receiving feedback with M2 stating, “I would like...the feedback and to tell me, like to encourage me like, ‘No, you are doing a good job’”. Positive feedback not only increases feelings of competence but also leads to greater internalisation, and in turn increased self-determination (Ryan & Deci, 2000). As individual competence increases users are thus more likely to become ‘repeat’ users, and the RTL framework mentions that ‘repeat’ visits also increases confidence. If the right environment is created, technology-mediated participation could not only encourage the open exchange of ideas, but could even surpass face-to-face interaction when it comes to the generation of innovative ideas.

Depending on individual ‘perceived’ level of competence or by their own choice, the system also needs to provide different ways for people to interact, which can be achieved by breaking the campaign into different stages and through specific task design. Chunking a campaign is common in crowdsourcing where more engaged or advanced users can be active at one stage where collaboration or deliberation is required, and others may prefer to just review options and cast their vote.

4.6.4 Task Type

Contrary to the popular belief in citizen apathy, lack of participation was not as a result of lack of interest. Some wanted to participate but just did not know how to go about it, and most did not even know how or where the notice of public meetings or engagement with government would be publicised. There is no “invitation or a formal notification sent to us”, or “it’s on some obscure page in a newspaper” (F1). M3 said he read all his news on his mobile device, so he is likely to miss notifications in traditional media altogether. Other interviewees also confirmed that they did not know where to find out about upcoming meetings. Other issues raised were the complexity of some participation processes, or the need to become more politically active to be taken seriously.

Some interviewees just wanted to vote whereas others wanted to become more involved. Interviewee F2 indicated that she wanted more of a partnership with government and not just, “okay, we have heard your complaints and then they go off .. themselves and come up with a solution”. When asked if she would want to become involved in either a special interest, or

other group who interacted with government, F1 replied “no”, but did want to know “what was going on”. M1 added that there needed to be a way “of being able to participate in that process once I know what is going on”. Catering for different levels of involvement in government crowdsourcing design is essential for the process to be called ‘inclusive’. In a crowdsourcing campaign, citizens should therefore be able to choose different levels of engagement for different campaigns.

Depending on the application, the four types of crowdsourcing often appear together in various combinations. Some may have processes of idea generation through crowd solving followed by crowd rating, thus accommodating different ‘levels’ of citizens, but more importantly by being inclusive it could improve buy-in and legitimacy, while reducing suspicion in a ‘new’ political process. But, crowdsourcing citizens could become challenging especially where complex participation may require domain knowledge and therefore necessarily exclude most citizens. This could be seen by some as ‘elitist’ and mirroring the kind of exclusion that exists in real-world political participation (Bang, 2009). Nevertheless, interviewees understood that they could not be involved in all issues. As with the experience of COPs, the correct balance would have to be found that would allow for freedom of expression while still maintain a certain level of control so that crowdsourcing initiatives proceed with a purpose and according to plan in order to achieve the desired outcomes.

4.6.5 Ease of Use and Performance Expectancy

Both Ease of Use and Performance Expectancy (usefulness) constructs were drivers in the model and was supported by interviewees. Results of the survey indicates that the usefulness of the system was rated greater amongst younger participants (18-29), dropping for the 30-35 year age group, increasing again in the 36-45 age group, before declining again in the 45+ age group. While there is no clear explanation for this pattern, the differences are marginal and in some agreement with Mattes & Richmond (2014 , p. 12) who conclude that “across a range of indicators of how citizens think about their role and capacity as citizens, there is virtually no ‘age profile’ to democratic citizenship in South Africa. Thus far, across several different indicators of democratic citizenship, the youth look almost identical to their older counterparts”. Hence it appears that age and gender differences may not play a very big role in this context. In addition, no gender difference was found when it came to ‘Easy to Use’, which is contrary to the original UTAUT ‘gender’ hypothesis; but confirms the current thinking that gender distinction is no longer relevant.

4.6.6 Implications

“Seems like I have to belong to a political party and that's the only way to participate...these people clearly know each other, they know each other's motives, they know each other's game and they're just doing this as a form of protocol like - we had the meeting” (F2). This touches on another aspect of ‘Ease of Use’ that goes beyond the technology and system design. Instead, this refers to simplifying some processes in order to make them more accessible. While it may not be feasible to simplify everything, citizens would need to feel that they could become part of the process if they wanted to. In the case of more complex scenarios, pre-qualification may be necessary for participation at a specific level, however citizens should not at any stage feel like ‘outsiders’, and ultimately they should be given every opportunity to engage.

But while M1 indicated that he would engage only if “it was easy...ease would be the biggest motivation”, citizen expectation as to the usefulness of the system is expected to be extremely high. Previous experiences with government evoked responses such as, “We have voiced opinions about a lot of things in our country and we haven't seen change” (M4). While the importance of feedback has been stressed in the literature, unlike commercial crowdsourcing systems, a platform designed for government crowdsourcing would need to be outstanding in this regard. Lack of timely and appropriate feedback could result in a negative backlash from citizens, as they would expect transparency and some tangible results. A primary goal of the platform should then be to provide for a proper feedback systems, otherwise it will just be seen as just another government ploy to create the ‘impression’ of participation. M4 said, “if you voice your opinion and you actually see changes, then people will start voicing and speaking out more”. However, if citizens participated but perceived that their suggestions were not considered, then as M1 said, “I would be disillusioned” (M1), and thus would result in individual amotivation and ultimately disuse of the platform.

M1 mentioned that the system would be great because it could potential allow him to track responses of public officials, or maybe draw comparisons between them. He also said that it could be used to “create public pressure if someone (politician) is not pulling (their) weight”. That said, it could change the citizen perception that government has to “come and solve our problems” (F2), and if they don't, imply that “they (government) are not doing their job” (F1). Citizens would no longer be able to say that they did not know what was going on, or that they did not have an easy, ‘safe’ and convenient means to engage, as a new platform could promote government-citizen participation and some shared decision-making. Local councillors would also be able to make more informed decisions because they would be able to engage and access their constituency as a source for ideas and solutions. Public perception of politicians would also change as indicated by M4 who said, “I would...actually respect that individual

(politician), because, rather show that you are willing to work together as a community and that you are willing to take the opinion of the community and to sit and try and throw things under the carpet...I would actually respect someone who puts it out there and says, 'Listen, I don't have the solution for this. Help me. I'm your leader, but I need help'.

While crowdsourcing techniques could allow for a more directed engagement platform and holds great promise, there are some implications for government that would place direct pressure on public servants. M4 states that "community leaders need to be wary of what kind of question they pose. I think they should be doing the groundwork beforehand to see, you know, what kind of impacts it would have". The ability to plan a crowdsourcing campaign may not be part of the skillset of existing government employees. Hence they would either need to be upskilled, or individuals with experience in crowdsourcing campaigns would need to be employed. Another option could be to explore a partnership with private organisations who have successfully implemented similar systems. As this research was citizen-centric, it is unclear what the reaction of government officials would be. One of the interviewees (M2) however did admit that he once was a politician, and did not believe anything could be done to improve how politicians 'behaved', citing corruption as an example. He further indicated frustration with the current political system with, "too much promise that never came. I told myself, no, I am wasting the time here" (M2). It may be that he had an 'idealistic' view of the changes he could effect as a politician and was not prepared for what F2 called "the game". Even so, he saw merit in a platform that could bridge the gap between politicians and citizens after some discussion around how the system could work.

While interviewees indicated their intention to use the system as it was described, most were also aware of some of the pitfalls involved with online interactions. The concerns around safety and security was expressed by one interviewee who remarked that, "If such a system was in place I for one would first investigate if there...no funnies before involving the community thus safeguarding them in the process" (F5). There was also an appeal for the option to be anonymous, but exactly how this would be implemented would need to be carefully considered. Total anonymity could be subject to abuse and a mechanism would need to be found that would protect both anonymous as well as non-anonymous users. M4 believed that "it would have a much better ...because you have got the choice of (being anonymous and) just voicing your opinion". People would not want to interact if they didn't feel safe, and this way, "at least you are getting some feedback" (M3).

Some caution also needs to be exercised when deciding how and when to include citizens. As mentioned before, everyone cannot always be involved in every aspect and every decision.

Many did not want to become “Expert Citizens”, and in some cases subject experts may be required to validate certain suggestions. More than half of the interviewees agreed that “even though the majority goes with one thing, it doesn’t mean that that is the right way to go” (M3) or as F2 bluntly put it, “what happens when the majority are dumb or ill informed”. The message here is that, from the outset it should be clear that the use of polls would not be used to determine an outcome. Rather, the message should be that while everything will be considered, some additional deliberation would still be required before a final decision was made.

4.7 Conclusions

The contribution of the qualitative data added insight and understanding to the quantitative data. In addition, with the original model being amended, the data analysis also resulted in some hypotheses being supported, while others were excluded altogether.

Before proceeding with data analysis some necessary test were run to ensure reliability and validity and factor analysis was used to confirm the question-construct mapping. Most fitted as expected with only a few exceptions. Two new factors emerged that differentiated between task types. It was deemed to be a valid construct to add to the model at this early stage, although it is acknowledged that future testing and refinement of the model may determine if these items are retained, or removed completely. However the internal consistency of the measurement was very low, so the questions should be revised.

The results also indicate that the measures, for intrinsic motivation would need to be revised to be more suitable in a public-sector context. Furthermore an understanding of motivation would greatly improve system design and implementation. The ideal would be to incorporate a mix of incentives and motivations to cater for different individual motivations. An understanding of SDT provides an important basis as the principles are applicable to other areas such as support and management, feedback and results as well as task design, as their implementation could affect individual motivation. There was a preference for tighter management, structured processes and controls in the form of policies and procedures. These would provide for a ‘safe’ environment for engagement as opposed to ones which allowed for ‘open’ and ‘free-for-all’ interactions. Feedback also emerged as an important motivator, with a lack thereof discouraging further engagement on the platform. The importance of being as inclusive as possible was also highlighted as the results showed that different participants expressed different expectations regarding engagement. Some merely wanted to vote while others wanted to be more involved. The different crowdsourcing types are directly applicable in this regard in that a combination of types could be provided for engagement.

5 Conclusion

As there were no widely accepted models for public sector crowdsourcing, a conceptual model was developed and tested. While the research included a fairly large sample and a number of independent variables, the resulting model explains very little (32.6%) of the variation in Behavioural Intention. Nevertheless it has provided valuable insight into some factors that would need to be considered. The main research question was: *Which crowdsourcing factors are applicable and appropriate for government crowdsourcing implementations, so that citizens would be motivated to participate in such initiatives?* In order to answer the main question, three sub-questions were asked and a literature review conducted to extract key factors.

The first sub-question asked: *Which types of tasks are best addressed using a crowdsourcing platform for citizen input?* What emerged is that a variety of tasks, ranging from simple to complex, should be provided to be as inclusive as possible. Some participants were only interested in voting while others were interested in greater involvement. The different crowdsourcing types can be used as a reference in this regard and campaigns can use a combination of the different types; and depending on the activity, potentially everyone could be involved at some stage in the process. Some caution would need to be exercised with being too inclusive as it may not be possible to involve everyone especially in cases where expert knowledge is required.

The second sub-question asked: *What task processes need to be taken into account in order to facilitate citizen participation on a government crowdsourcing platform?* This covered a spectrum of system-related aspects such as management as well as other components of technology-mediated participation that would encourage further participation. Support and management of the platform emerged as a major driver in the model, and highlighted the requirement for rules of engagement and administration to ensure participant safety. There was also a strong desire for feedback, especially since the current citizen perception was that politicians act in isolation and out of self-interest. It is therefore important that all outcomes are properly communicated. Individual feedback should also be given, and positive feedback helps to build competence and confidence which would in turn increase the likelihood of participants becoming repeat users. Providing for proper feedback is an important facilitator, and lack thereof can result in amotivation and ultimately disuse of the system.

One important consideration that emerged was the requirement by some to remain anonymous when interacting online. Some of this fear stemmed both from participant experiences in real-world participation as well as observation of online discussions that not only spiraled out of

control, but also resulted in individuals being ‘singled out’. The option to remain anonymous would make many participants feel safer, but the precise implementation would need to be carefully considered to guard against abuse.

The final sub-question asked: *What combination of motivations would work best for encouraging public participation on a government crowdsourcing platform?* While financial incentives and recognition are used on some private sector crowdsourcing platforms to drive participation, the results indicate that in this context, individuals would still participate if there was some benefit for the community even if there was no personal monetary incentive. This should not however discount the use of financial incentives or recognition as these could prove useful in some scenarios. While large financial incentives may not be palatable for some, there could be some middle ground where a smaller monetary incentive may spark some individuals into action. Indications are that a mix of incentives such as recognition, as well as social and financial would be required in order to satisfy different participants. However there were also indications that financial incentives would be acceptable if they were instead directed towards the community.

The outcome of this research reflects the need for a managed crowdsourcing process as expressed in the preferred definition for government crowdsourcing in that “It involves an organisation-user relationship whereby an organisation executes a top-down, managed process that seeks the bottom-up, open, creative input of users in an online community”, and it is this management that makes it “productive and full of potential to do good” (Brabham, 2013, p. 127).

5.1 Limitations and future research

The study was confined to the greater Cape Town Metropolitan area as it was close to the researcher’s place of residence, and due to the data collection method it cannot be considered to be representative of the entire city. Due to the population demographic a paper-based questionnaire was deemed to be more inclusive and as such there were printing, distribution, and collection costs involved. Hence there were both financial as well as time constraints. This research was also conducted during an election year, and it is unclear what impact if any, this had on the nature of participant responses.

A citizen shift from a ‘once-off’ election mind-set to one of ‘on-going’ participation would require changes in government employee mind-set and skills, as well as changes to existing structures and processes. This highlights a limitation of this research in that it was citizen-centric, and does not explore the impact that crowdsourcing initiatives would have on government structures. Future research should address implementation issues and readiness

from a government perspective, including the shift in mindset required on the part of government officials.

More appropriate measures for the intrinsic motivation construct also need development for it to be more applicable to a political context. The two new task type constructs revealed in the factor analysis should also be revised with additional questions to improve the reliability of both.

The limitations of presenting a hypothetical scenario instead of a real system, is also acknowledged. Future research could potentially evaluate and further refine the proposed model by testing a real implementation.

5.2 Final Thoughts

Overall, participants expressed great interest in participating in politics and the use of crowdsourcing concepts show some potential in providing some alternatives for increasing citizen participation. While ‘control’ is not desirable, there appears to be a need for an alternative platform for structured and managed G2C, C2G, and C2C engagement. A correctly implemented technology-mediated participation platform would not only lead to better system design and development, but also fewer implementation failures (Preece & Shneiderman, 2009). The proposed conceptual model should be seen as a first step.

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Appendix A : Questionnaire – English



The purpose of this research is to determine if crowdsourcing can be used to motivate citizen participation in government. This is for research purposes only. It is completely voluntary and you can stop at any time you wish, and it will take about 10 minutes to complete. No personal details are required, so no answers can be linked back to you. This research has been approved by the UCT Commerce Faculty Ethics in Research Committee. If you have any questions regarding this research you may contact the researcher, Kevin Cupido on 083 581 7373.

Please indicate your gender <input type="checkbox"/> M <input type="checkbox"/> F	What age group do you fall into? <input type="checkbox"/> 18-23 <input type="checkbox"/> 24-29 <input type="checkbox"/> 30-36 <input type="checkbox"/> 36-45 <input type="checkbox"/> 45+	Are you currently employed? <input type="checkbox"/> Yes <input type="checkbox"/> No
What is the highest level of education you achieved?	<input type="checkbox"/> no formal education <input type="checkbox"/> technical / trade certificate	<input type="checkbox"/> primary school <input type="checkbox"/> secondary school <input type="checkbox"/> diploma <input type="checkbox"/> degree

Consider the following scenario

A new computer system will allow you to participate with local government regarding your community and there are strict rules in place to ensure that you are safe while using it. It can be used from a computer or your mobile phone. You can use it to raise issues so that your local councilor knows about it, and your councilor will be able to ask the community for advice, or solutions to problems. It also allows you to put up your ideas for others to see, and to vote on ideas from others. Prizes may also be offered for participation, your ideas or solutions. Does this sound like something that you would use because it would be useful to you?

Please tick your choice	Strongly Agree	Agree	Not sure	Disagree	Strongly Disagree
No matter what the outcome, I would be satisfied if I feel that I have learned something new.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Curiosity is what would drive me to participate.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
I want to challenge myself to help solve the problems presented.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
I want to find out how good I really can be at participation.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
What matters most is that I enjoy what I do when I participate.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
I would feel guilty if I did not participate.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
I feel that it would benefit me if I participated.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Participating in the system would result in direct benefits for me.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Participation in the system would allow me to have a say over things that would directly affect me.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
It would be in my interest to participate.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
It would be important for me to make the effort to participate.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
I would participate because there are people that I know who would think that I should.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Participation on the system would allow me to show others how much I know.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
I would help others to use the system.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
I would like to be known as someone who would help others to use the system.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Getting paid for participation would be important to me.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Please tick your choice	Strongly Agree	Agree	Not sure	Disagree	Strongly Disagree
How much I participate depends on how much I would be paid.					
The money I would make would have a strong effect on how involved I would become.					
The system must clearly outline the activities required.					
There should be clear steps for interacting with the system.					
I would like to be guided through the participation process.					
I would like to inform everyone about problems where I live.					
I would like to offer solutions.					
I have little chance to help solve problems.					
I would just like to vote on solutions.					
I would like to tell others about ideas I have to make things better.					
I will use different skills and talents to solve different problems.					
Seeing changes in the real-world as a result of participation in the system, would make me participate more.					
Getting feedback on my input would make me participate more.					
Feedback would help me to learn more so that I can participate better in future.					
Using this system, I could tell government more quickly of issues that affect me than using any other way.					
The system would increase my ability to participate.					
The system would increase my chance of being able to make a difference.					
My interaction with the system would be clear and understandable.					
It would be easy for me to become skilful at using the system.					
I would find the system easy to use.					
Learning to operate the system would be easy for me.					
There should be strict rules on how to behave when using the system so that it is safe for everyone.					
Proper management is important to the success of the system.					
System administrators should monitor, assist and guide participants.					
I think that I will use this system to participate with government instead of doing things the old way like going to public hearings.					
I would try this new system to interact with government.					
I intend to use the system when it becomes available.					

Thank you for taking the time to complete this questionnaire.

Appendix B : Interview

Opening Narrative:

Thank you for taking the time to speak to me. Before we begin, I would like to assure you of your anonymity. I will never you by name, but rather by a code such as I4. I would also like to ask your permission to digitally record this interview as it would make it easier for me to recall later. You may also choose to stop this interview at any time if you wish. I would like to begin with a general discussion around political participation and your feelings about that, and what encourages or discourages you from participating. I will then tell you a bit about crowdsourcing and how it's been used. I would then also like to talk about technologies that you use and / or familiar with that can be used in citizen participation.

Preparation : Depending on their responses to the survey, some areas may be probed more!

The following are prompts for the researcher and serves to “guide” the interview.

1. What do you think of the political participation options available to you?
 - a. What has been your experience of participation before
 - b. What were the challenges or difficulties in participating?
 - i. Intimidation, ‘couldn’t have your say’
2. What kind of task would you feel comfortable performing:
 - a. Easy – like voting
 - b. Complex, like offer solutions- And why in both cases!
3. In terms of the system, how do you think it can help you to become a more active citizen?
4. Would you be motivated by incentives?
 - a. Money, or just want to help community?
 - i. What would motivate you?
 - b. How would participation make you feel?
5. CrowdSourcing : give a brief explanation with some examples :
 - a. Inform councillor, post ideas and solutions
- 6. Focus MORE on this section as it addresses the last research sub-question**
 - a. Which technologies would be best suited to crowdsourcing initiatives.
 - b. Do you have access to the Internet - computer?
 - c. Mobile phone
 - i. Access to Internet
 1. Do you use MxIt, WhatsApp, BBM?
 2. What is your impression of mobile phone costs?
 - ii. SMS, MMS (one-way)
 - iii. USSD – ex (explain if they don’t know – probably used before but don’t know it!)
 - d. What would you prefer to use, - and why?