PARAMETERS FOR THE DESIGN AND DEVELOPMENT OF A CROWD-SOURCING PLATFORM FOR MONITORING GOVERNMENT PROJECTS

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ABSTRACT

Crowdsourcing is a new concept enabled by evolving information and communication technologies. It is based on the framework of group intelligence. It is a promising way to encourage citizens to participate in monitoring of government projects. Social media applications facilitating real-time data collection, categorization and redistribution from crowds to crowds can also make project monitoring efficient. In view of the above this study was conducted to determine the parameters that can be used in the design and development of a crowdsouring platform for monitoring government projects. In order to achieve this, data from the Ministry of Public Works, Government of Kenya was collected using a semi-structured questionnaire, and was analysed using SPSS. The results show that there is very little interaction between the government and citizens in project monitoring as the response rate was low at 4%. Forty-five (45%) percent of the project monitoring work is done by the technical staff perhaps because they

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have the expertise and can provide opinions depending on their experience, specific abilities, specializations or skills. Majority (43.3%) of the respondents were below 30 years of age, and had work experience of less than 5 years. The results further indicate that a significant proportion of the people involved in government project monitoring are male at 80% response rate. The most critical parameter in project monitoring is the status of the completion of the project. The monitoring is mainly through site visits and the response rate for it corresponded to 88.3%. It was noted that most (36.7%) of the respondents monitored projects on monthly basis. The study establishes various parameters for designing a crowd-sourcing platform for monitoring government projects. These include the nature of the crowd, contributions made by the crowd, incentives and motivations of the crowd and the process of evaluating the contributions that are made.

Keywords: Crowdsourcing, information-communication-technologies, group-intelligence, social-media, real-time.

INTRODUCTION.

Crowdsourcing is a new concept enabled by evolving information and communication technologies (ICT). Crowdsourcing is often based on the framework of group intelligence (Lévy, 1997). The opposite of group intelligence is relying on a single agent, for example, a knowledgeable expert. The concept of group intelligence has been popularized as the wisdom of crowds (Surowiecki, 2004), and crowdsourcing can be defined as a tool to gather group intelligence for certain tasks. Related concepts to crowdsourcing are co-creation (Prahalad and Ramaswamy, 2000), open innovation (Chesbrough, 2003) and user innovation (Von Hippel, 2005).

Today's technology is changing rapidly and governments around the world cannot ignore these changes, but must rather take into consideration when thinking about their strategies for engaging with their constituents. Potentially, crowdsourcing is a key technology enabler for participation in different ways. Crowdsourcing seems to be a promising way to encourage citizens to participate in the governments day-to-day operations and as such it can be a useful tool when it comes to project monitoring.

The usefulness of project monitoring can be significantly improved by the use of social media applications that facilitate the collection of data in real-time, organization of the data and redistribution of the data collected from crowds to crowds (Eysenbach& Till, 2001). The government will find it hard to ignore crowdsourcing initiatives if there is stronger group that recognizes with the objectives and it is within the campaigning crowds.

LITERATURE REVIEW.

Potentially, crowdsourcing is a key technology enabler for participation in different ways (Bassett and O'Riordan, 2002). The usefulness of project monitoring can be significantly improved by the use of social media applications that facilitate the collection of data in real-time, organization of the data and redistribution of the data collected from crowds to crowds (Eysenbach& Till, 2001). With crowdsourcing one can use open-source software instead of propriety software, hence minimizing the cost of monitoring projects. Malone *et al* (2008), argues that crowdsourcing application like Wikipedia has revealed that collaborative content development can dwarf the quantity and quality of a traditional encyclopedia and other closed expert group efforts. Thousands of contributor's from across the world have collectively created the world's largest encyclopedia, with articles of remarkably high quality and this is happens in real-time.

Brabham (2009) argues that crowdsourcing is most effective when problems are clearly framed and pertinent data is available, The ability of the crowd to handle complex data should not be underestimated, as many high technology and complex projects, such as Linux or Wikipedia, have successfully used crowdsourcing (Brabham, 2009). In their analysis of collective intelligence, Malone *et al* developed a conceptual framework of four building blocks for crowdsourcing. They describe the "what", "who", "why", and "how" of collective intelligence approaches. The "what" block according to them differentiates between a "create process" in which a new item is generated and a "decide process" in which the alternatives are selected and evaluated. Contributions by the individuals in the crowd may be independent or dependent on each other. In the case of "creation process" there may be decisions by individuals and decisions by the groups. The "who" block according to Malone *et al* refers to the crowd, which is represented by an independent mass of people. Participating persons can hold different roles, e.g., author of a document, expert inside a forum/domain, rule creator or

information/functionality mapper. They all are part of the crowd and can collectively optimize the entire process.

The "why" block describes the motivation of participation is founded in "Money", "Glory" or "Love". In this paper the major reason to was to ascertain that the project meets the quality checks that have been put in place. On the one hand, this applies to the quality and relevance of the received information.

The "how" block provides what is required to process a multitude of contributions to fulfill its design purpose. Schenk and Guittard (2011) provide probably the most fundamental distinction of aggregation processes in crowdsourcing: integrative versus selective crowdsourcing. Integrative crowdsourcing creates value by pooling potentially large quantities of complementary input. Selective crowdsourcing creates value by having the crowd providing a set of options from which the result is chosen.

Presently, the Kenyan government has not embraced crowdsourcing as tool for developing and monitoring of government services and projects. Its operation requires all e-government services (e-services), government projects, government websites, applications and systems that are used within government are developed and monitored in-house by government employees (author's view). Such projects that require monitoring and are still based on traditional monitoring include: road construction, energy production, construction of government buildings, among others (author's view). Quite often some of these projects end up stalling or taking longer to complete due to poor workmanship, contractors not adhering to the specifications, lack of proper quality control and inadequate project appraisals at all stages of the project life cycle Heeks (2004)

In an effort to enhance the development and monitoring of government projects, this paper seeks to determine the feasibility of applying a crowdsourcing platform for this purpose. The usefulness of project monitoring can significantly be improved by the use of social media applications that facilitate the collection of data in real-time, organization of the data and redistribution of the data collected from crowds to crowds (Lietsala&Sirkkunen 2008).

MATERIALS AND METHODS

The research used a descriptive quantitative approach to obtain quantifiable information for the study. The target population comprised professionals in the Ministry of Public Works Kenya, specifically those who were involved directly in the monitoring of construction projects undertaken within the ministry. A simple random sample size of 67 people was taken and this

represented 10% of the staff. Data was collected using structured and semi-structured questionnaires that were served to the respondents through drop and pick method. The parameter of interest in this study were: the responsibility of the persons in project monitoring (viz., technical, administration, central project planning and monitoring departments, citizens and the clients), gender composition, the period for project monitoring, Age group of the respondents, the methods that were employed in monitoring projects(viz., Reports from clerk of works, project manager, contractor and the client, site visits, minutes from meetings held on the project and crowdsourcing). The data was analyzed by the use of descriptive statistics using SPSS and presented through percentages, means and frequencies.

RESULTS ND DISCUSSION

In the context of crowdsouricng according to Malone *et al*(2008),several parameters were looked at that form the building blocks of crowdsourcing. In the "Who" block the parameters that were checked include the persons responsible for project monitoring, gender composition of the respondents and age of the respondents. The "What" block looked at parameters e.g. the duration in which project monitoring is done and the method used to monitor projects. In the "Why" block, the parameter that was checked was why the respondents monitored projects. In the "How" block, the parameter that were checked include the use of mobile phone in project monitoring.

1. **Responsibility in Project Monitoring**

Figure 1 presents the response rates for those concerned with the responsibility of monitoring government projects. The figure shows that45% of the respondents indicated that the responsibility of project monitoring was assigned to the technical departments, the administration department was represented by 26% while the central planning and project monitoring unit, citizens and the client were indicated as 24%, 4% and 1% respectively. This response can be attributed to the fact that the Ministry of Public Works is involved with construction projects. Therefore an expert's opinion in this case from the technical departments could be worth considering. (Corney et al. 2009) argue that some of tasks can be tackled by an individual whilst some tasks may require additional expertise in tackling them.

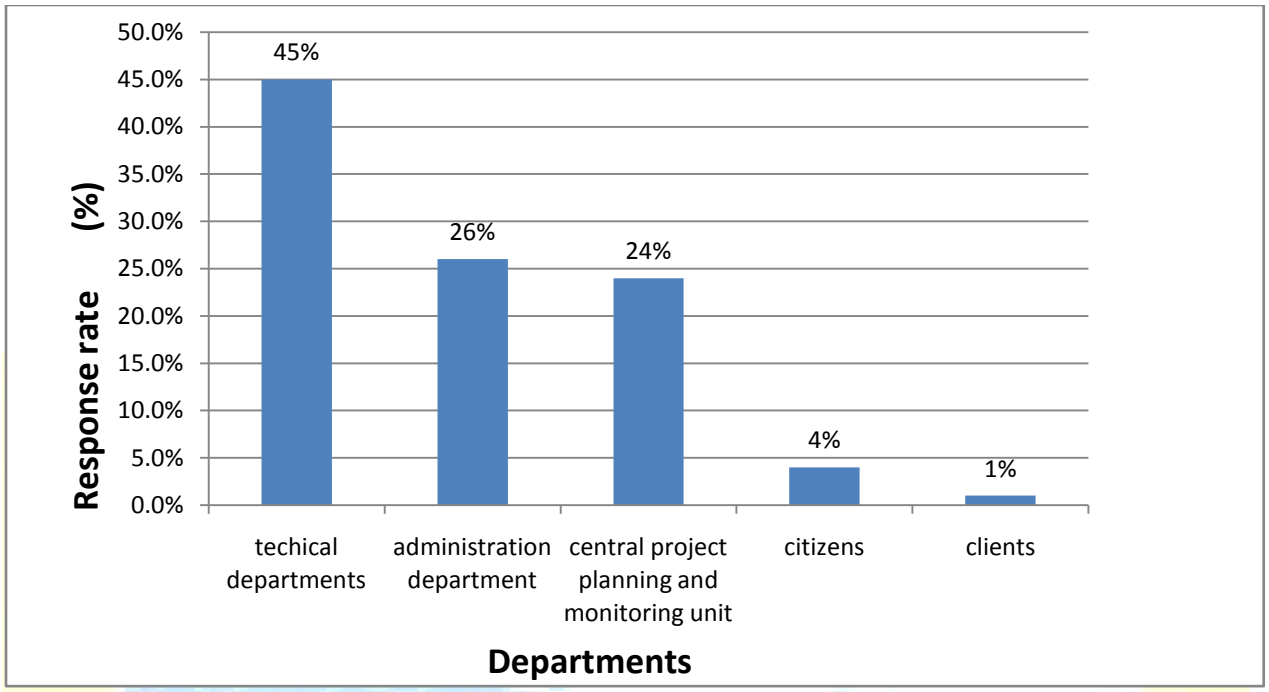

Figure 1: Response rates for "responsibility in project monitoring" as a factor to be used in development of crowdsourcing platform.

2. Gender

The gender representation of the respondents involved in the study is as illustrated in figure 2. It shows that majority of the respondents were male and this represented 80% while 20% were female.

According to The Constitution of Kenya Chapter 4, Article 27 the composition of gender slightly fails to meet the national threshold. As it is noted that one gender exceeds two third majority of any gender in public institutions.

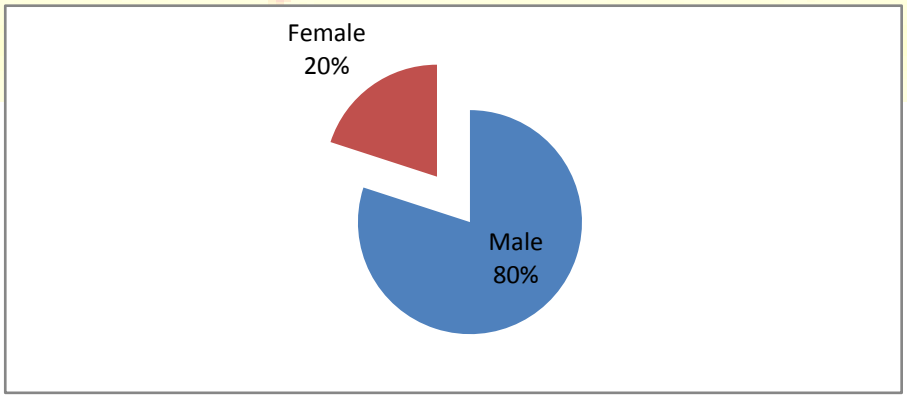

Figure 2: Response rates for gender as a factor to be used in development of crowdsourcing platform

3. Age Group

43.3% of the respondents were between 20 - 30 years, 41.7% represented the respondents who were between 31 – 40years and 15% of the respondents were above 41 years represented. In this regard majority of the respondents of the study composed of young officers.

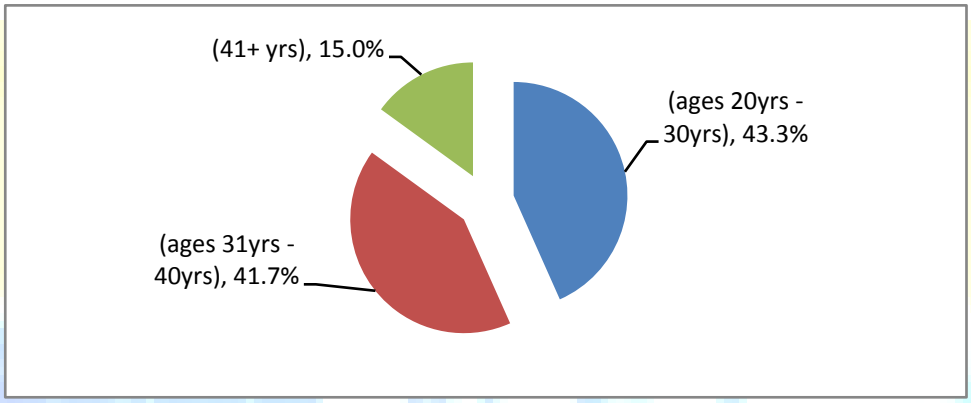

Figure 3: Response rates for age group as a factor to be used in development of crowdsourcing platform.

4. Period of project monitoring

The period in which project monitoring is done is also critical for the smooth execution of any contribution project. In this regard the respondents were requested to indicate how frequently they undertake project monitoring.

36.7% of the respondents indicated that they undertake monitoring monthly, 20% indicated it done on weekly basis, 15% of the respondents indicated that it was done daily and quarterly and 1.7% indicated monitoring of projects is done bi-annual (half yearly).

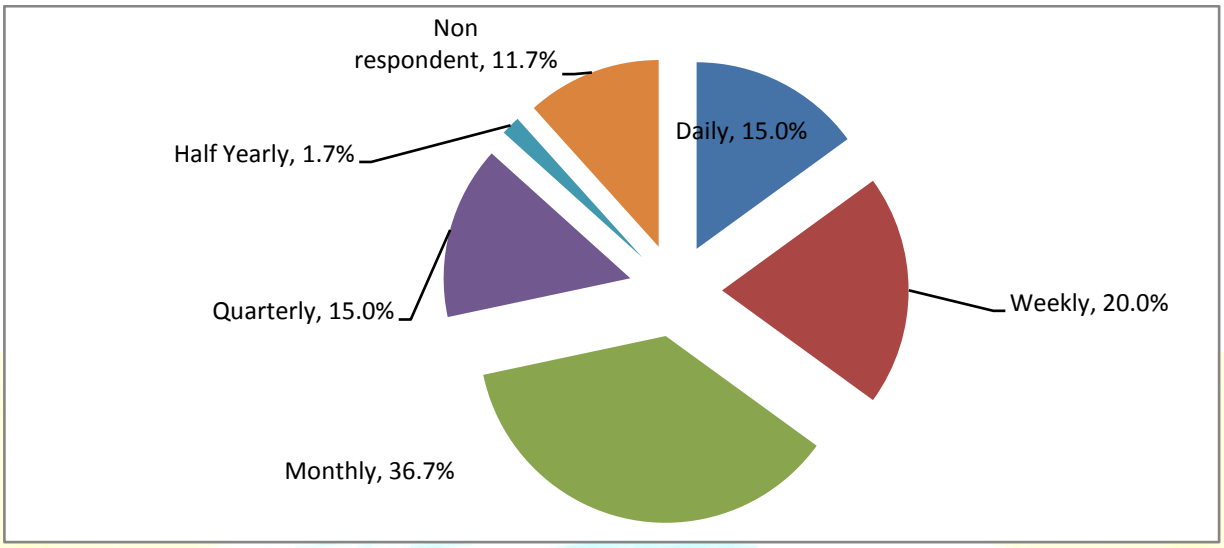

Figure 4: Response rates for "project period monitoring" as a factor to be used in development of crowdsourcing platform.

5. Method used for Monitoring

Majority of the respondents indicated that projects were monitored through site visits this was represented by 88.3%, 76.7% of the respondents indicated they monitor projects through reports obtained from the Clerk of Work who is based on site, 71.7% of the respondents indicated that they use the project minutes from the progress meetings. 63.3% of the respondents indicated that they use reports from the project manager to monitor the project while 55.0% of the respondents indicated that they used reports from the contractor on the site to monitor the progress of a project.

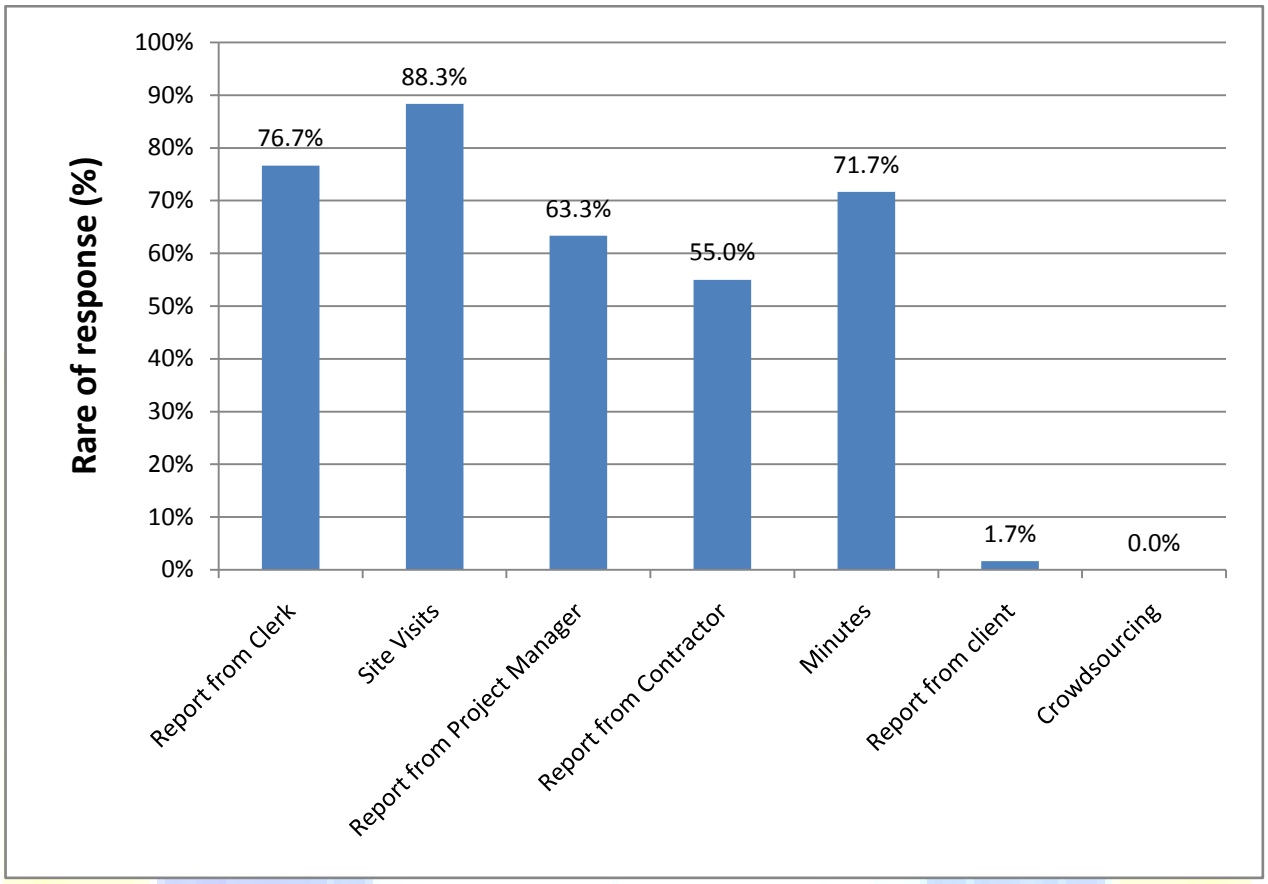

Figure 5: Response rates for "methods used for project monitoring" as a factor to be used in development of crowdsourcing platform.

6. Reasons why projects are monitored

It was prudent to note the reasons why monitoring of projects was important and their various reasons were noted. The figure shows that, 33.3% indicated projects were monitored to check if they met the specification and quality checks as designed by the various professional, whereas 20% noted that it was to ascertain progress of the project on site both the issue of monitoring cost and project supervision had 11.7% and 8.3% respectively. Rouse (2010), argues that individuals take part in a task due to various reasons. These reasons are either internal or external to the organization. In the study, most of the reasons that the respondents indicated were internal to the organization e.g. monitoring the cost, ascertain the progress of the project and to check on the quality.

It was also noted that 26.7% of the respondent did not respond of the question and this can be attributed to the fact that some of the respondents did not perform the task of project monitoring.

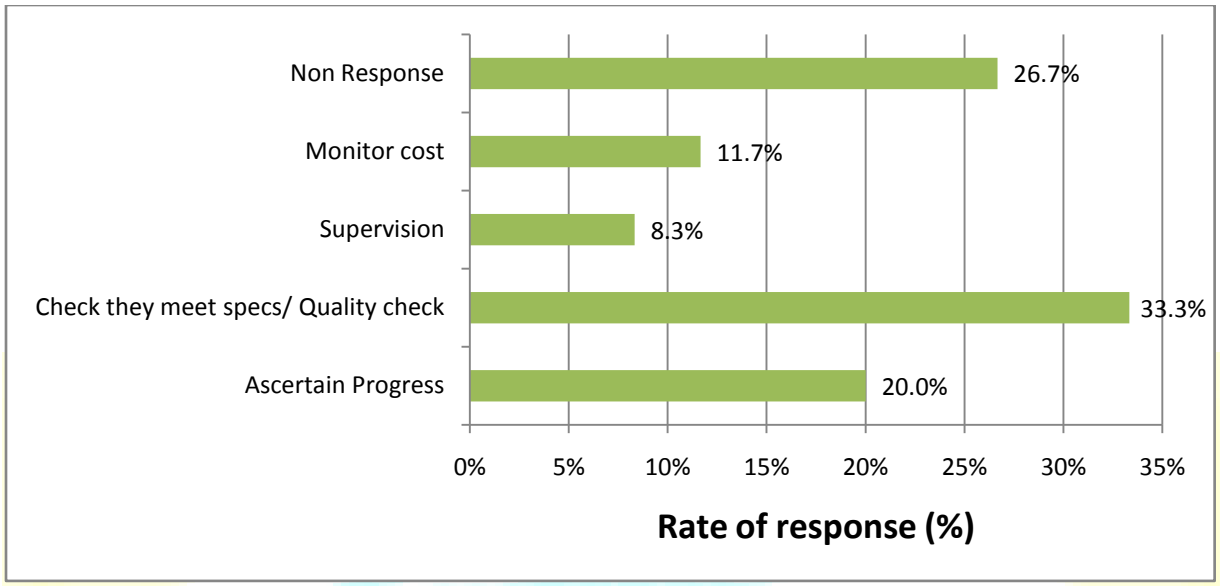

Figure 6: Response rates for "reasons why people monitor projects" as a factor to be used in development of crowdsourcing platform.

7. Use of Mobile phone in project monitoring

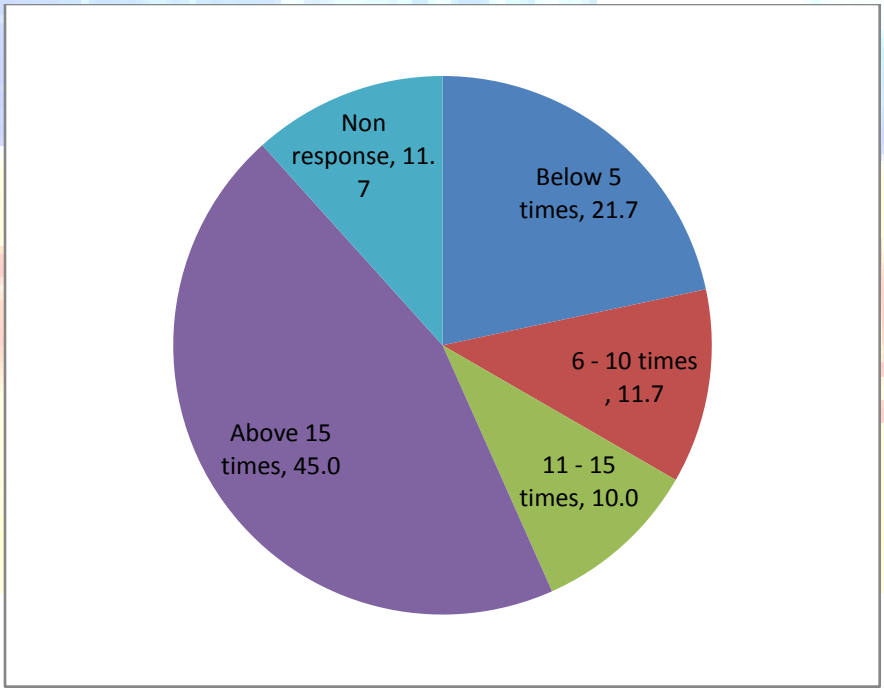

Figure 7: Response rates on use of mobile phone in project monitoring from the respondents of the study.

45% of the respondents used their mobile phones more than 15 times a day to monitor projects. 21% indicated that they use mobile phones less than five times a day to monitor projects. 11.7% and 10.0% of the respondents indicated that they use between 6-10 times and 11-15 respectively.

CONCLUSION

The study establishes that monitoring government projects has been mandated to the technical staffin the ministry. Majority of the staff conduct monitoring on a monthly basis. This would however change to daily if the government would embrace crowdsourcing in which citizens would be involved in monitoring. The method preferred by most staff is through site visits which translate to extra expense for the government to move the staff from one site to another. Citizen involvement would be a boost to cost reduction since most of this projects are for the community and thus if the community is involved less costs would be incurred by the ministry.

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