

Different or Alike? Motivation to Participate and Social Influence in Online Discussions by Age and Gender

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1 ABSTRACT

While the use of incentive mechanisms to stimulate efficient communication and collaboration among individuals in online platforms, groups and communities has been widely documented and discussed, comparatively little is known about the influence of age and gender on the motives for participation in these platforms and how responses may vary based on these personal attributes in less developed countries like Afghanistan. In this paper, we examined if the age and gender of the respondents affect the kinds of incentives that stimulate their effective participation in online discussions and if such online discussions have a social influence on participants presented with such incentives. To this end, we first ran an idea contest project, using a real world online discussion forum called D-Agree in collaboration with Kabul Municipality (KM). We incorporated different incentive schemes which yielded 3,892 respondents/participants who cumulatively exchanged 14,587 opinions and responses on the platform. This enabled us to conduct a post discussion survey, using SurveyMonkey where 201 respondents participated. We demonstrate that financial (e.g. monetary reward) and social (e.g. fulfilling the desire to learn and improve one's abilities, knowledge and experience) motives consistently outperform all other incentives as motivators of participation in Afghanistan. The results of this work demonstrate that males and females are influenced by similar incentives to participate in online discussions. As for the social influence of participating in online discussions, the results show that respondents were affected from a moderate level to a great deal, but with no significant differences based on age and gender. The output of this research might open a new direction in the study of social influence based on incentive mechanisms. This could be used as a planning tool to stimulate participation in forums/platforms for crowdsourcing.

Keywords: Idea contest, Civic engagement, Extrinsic motivation, Online discussion, Online participation

2 INTRODUCTION

The emergence of computer mediated communications over the past few decades has dramatically changed many people's social lives (Sun et al. 2011). In particular, online forums have become a major medium for facilitating large-scale discussions on various issues ranging from personal, family, societal to governance. Online communities, which are usually divided into smaller groups within these forums, might act collectively in ways that seem intelligent (Malone et al. 2009). Thus, online forums have attracted research attention as an approach to discourse-centric collective intelligence to offer innovative solutions for improving critical social problems (Haqbeen et al. 2021). Online forums provide efficient tools for eliciting participation in crowdsourcing projects and policy-making. While some discussions in online forums may be very specific (e.g. discussions of climate change issues in Climate CoLab platform or urban-related SDGs in D-Agree platform), some others may be general social platforms with unrestricted focus (e.g. discussing travel experiences in TripAdvisor or sharing social experiences about one's self, family, career or pressing social problems such as insecurity, public health issue like the global CoronaVirus pandemic, unemployment and inequality on Facebook). Unlike the discussions in conventional forums where people just share their experiences and communicate with one another through citizen-initiative interactivities, participants in specific purpose discussion forums focus on solving particular thematic social problem, such as climate change (Introne et al. 2011; Klein 2007), challenges of urban planning and enforcement (Haqbeen et al. 2020a; Haqbeen et al. 2020b) or the CoronaVirus pandemic (COVID-19) (Haqbeen et al. 2020c; Haqbeen et al. 2020d). These forums foster democratic deliberations aimed at generating innovative solutions to improve the society in line with the United Nations' sustainable development goals (SDGs) by focusing on solving specific social problems.

Users in online discussion forums may be autonomous individuals, but they often participate in discussions as collectives. The insights and intelligence from these collectives cannot be explained by aggregation of individual intelligence (Woolley et al. 2010) and being part of these collectives seems intelligent (Malone et

al. 2009). However, in online forums, the level of interactivity may be low due to the distributed and asynchronous nature of online discussions [Tavanapour et al. 2019]. As a result, people may not actively take part in discussions as collectives. Therefore, in order to encourage people to actively discuss in an online environment, incentive mechanisms such as discussion gamification (Dai et al. 2016), virtual incentive (Takahashi et al. 2016), scoring systems and automated facilitation have been developed (Ito et al. 2020).

In view of the foregoing, different type of artificial intelligent (AI)-enabled facilitation such as argumentative facilitation (Hadfi et al. 2021); discussion visualisation and incentive mechanisms (ranking system, gamification) have been introduced as extrinsic motivation solutions for online discussions with a view to stimulating interactivity and boosting users' intrinsic motivation. Specifically, AI-enabled facilitators and discussion scoring systems can spur interest in the discussions and help individuals to interact with one another. The online discussions which utilize a scoring system is proposed to enhance the various intrinsic and extrinsic motivational factors that are directly proportional to participants' engagement (Ito et al. 2014; Takahashi et al. 2016). Gamification, which includes point-based systems and virtual rewards, acts as a strategy to increase the contributions of members involved in online communities and discussions (Takahashi et al. 2016).

Studies show that both intrinsic and extrinsic motives affect individuals' decision to participate in these online platforms and communities and their level of interactivity with other individuals. In online discussion forums, users are motivated to take part in discussions when observing other users' participation (Sun et al. 2011). This influence may be strengthened by incentive mechanisms such as gamification, ranking system facilitation or other factors. However, little is known about what types of extrinsic incentives influence people to participate in online asynchronous discussions in less developed countries like Afghanistan and if the effect of these motivators is dependent on the ages and gender of participants. Therefore, this study contributes towards filling this knowledge gap by highlighting the factors that facilitate the collaboration and interactivity of individuals in online environments. In this paper, we explored how extrinsic motivators influence participation and level of interactivity in online discussions and if these motivators differ for different ages and gender of respondents. The findings of this study may be useful for the providers of crowd discussion support platforms and "crowd-sourcers" in selecting appropriate incentives for crowdsourcing in Afghanistan and elsewhere.

2.1 Problem statement

A fundamental concern when implementing crowdsourcing is how to meaningfully engage participants. Crowdsourcing involves engaging a nonline community or multiple communities through online forums in order to harness the knowledge of citizens into the process of policy-making by an interested party, individual or organization (Brabham 2008). However, crowdsourcing initiatives may be marred by lack of interest, asynchronous discussions, and low participation rate if adequate or best-fit incentives are not incorporated. Therefore, crowdsourcers must not only introduce extrinsic motivators in their crowdsourcing initiatives, but also, such incentives must resonate with the personal and social attributes of targets in order to increase their chances of participating in discussion forums and policy dialogues. In reality, however, identifying the right mix of incentives that could spur participation in online discussion forums remains a daunting challenge.

On the other hand, not much attention has been paid to the social influence of active participation in online discussions on people and if the social influence of such participation varies based on the ages and gender of participants. Social influence refers to the process through which people change their minds, modify their views, or change their behaviour as a result of their social interactions with others (Moussaïd et al. 2013). Thus, there is a need to identify various motivational beliefs, as well as gender and age-related behavioural attitudes toward online discussions.

2.2 Motivation and incentives

Motivation arises through interaction among different motives and incentives in a particular situation (Atkinson 1958). Motivation is mainly classified into two: intrinsic and extrinsic (Hossain 2012a). Intrinsic motivation refers to the motivation that is driven by the tasks, so that individuals do not require external pressure (extrinsic motivation) to activate it. According to Lepper et al. (1973) people are intrinsically motivated if the task itself is enough for satisfaction and there is no further reward apart from the activity.

However, extrinsic motivation is driven by external incentives. Factors such as curiosity or interest are examples of intrinsic motivators while extrinsic motivators could be financial, social and organisational. Low motivational levels presented by participants in discussions degrade the discourse's collective intelligence and result in a lack of interest to collaborate with one another. When the motives differ from the actual activity, external factors such as money, fame, prize etc. prompt motivation (Hossain 2012b).

In online discussions, both intrinsic and extrinsic motivators are needed to influence participants' engagement (Haqbeen et al. 2021). Since motivation is considered a process to release, control, and maintain discussion activities, it is imperative to know the factors that motivate people to participate. Having insights about different incentives helps to boost the motivation of participants to engage in and contribute meaningfully to online discussions, even though participation in such discussions may impose some constraints on their time and other resources.

To do this, we adopted the concept of discussion scoring and ranking system as virtual gamification and linked it with financial and social rewards in the online discussions. D-Agree ranks the participants based on their virtual points which are in turn assessed through postings, replies, and likes, or received likes and replies from other participants. We proposed a monetary reward of 30k, 20k and 15k Afs ($\approx 385, 257$ and 192 USD) for top three and certificates to top ten participants, respectively at the end of the contest project. The cash prizes and certificates to the top three and ten discussants, respectively (female = 1 and male = 9) were given by the Mayor of Kabul City at an official ceremony (see link to the award ceremony at https://www.youtube.com/watch?v=xdhZYJo_8nQ.

3 METHODOLOGY

We used an online discussion forum based on facilitation. This was followed by an online survey, which sought information from respondents on what motivated them to participate in online discussions in order to assess the effects of the proposed incentives on their participation. We focused only on respondents' data generated from survey forum in this study.

3.1 Study area

The current study used an open call idea (Brabham 2008) to shed light on motivation factors in online communities in Afghanistan. The open online call was chosen due to its accessibility given the representation of Afghan citizens in online communities both in Afghanistan and other parts of the world. Respondents were asked to join specific discussion spaces based on their residential areas and preferred time. We created 24 virtual spaces, 22 for Kabul city, comprising 22 urban districts, 1 for the 34 provinces of Afghanistan and one for Afghans in the diaspora.

3.2 Sample and sampling method

We used D-Agree as the discussion forum and SurveyMonkey as our survey instrument for this study. First, we used D-Agree, a text-based online discussion platform, which is anchored on support and facilitation means like artificial facilitation, incentive mechanism, ranking system and content visualisation developed by our team for hosting large-scale discussions or deliberations (Ito et al. 2020). The users in online communities were asked to join specific discussion spaces based on their residential areas and preferred time. The call for participation was made using open idea call techniques of convenience sampling. The call to participate was posted on Kabul Municipality's Facebook Page. KM's official Facebook page has 382,000 followers as of July 6, 2021. Thus, the link was available worldwide and could be viewed by anybody with an internet connection. The online discussion social experiment took place from August 13 to October 02, 2020 and generated 14,587 opinions from 3,892 registered participants.

Following the online discussions, using D-Agree, we used SurveyMonkey as a post-discussion survey instrument to assess if the incentives introduced within the online discussions had any effect on their interest to engage in the discussion activities as well as their opinions and behaviour in the course of the discussion and after. SurveyMonkey is a cloud-based software used by researchers to collect data on various issues of interest to them. It specialises in online surveys and rapid production of results (Halim et al. 2018). We used a licensed version of the software to design our questionnaire survey and sent the link to all who participated in the online discussions, using D-Agree. 201 participants (female = 49; 24.3% and male = 152; 75.6%) participated in the survey.

3.3 Discussions and survey instrument

A divergence discussion phase was selected for online discussion of this study. Discussion at D-Agree is divided into the following three phases: divergence, convergence, and evaluation. Divergence phase was chosen because we can collect a wide variety of opinions on the discussion themes. (Haqbeen et al. 2021). We selected seven discussion topics or raised questions and discussed possible solutions to the challenge of solid waste management (SWM) in Kabul city. Each of the seven themes covering different aspects of SWM lasted for one week. Based on participants' engagement with these themes, they were scored and ranked by the system in real-time within their related groups. They all discussed the same topics within the same time while using different spaces.

A closed-ended questionnaire was used to elicit responses during post online discussions. The questionnaire was divided into different sections, comprising questions on: (i) personal and demographic information; (ii) motivations for participating in online discussions; and (iii) effect of social influence from online discussions on knowledge and behavioural change. The two main questions related to the dependent variables were presented, using multiple-choice and Likert-scale. These questions were phrased thus: "What motivated you to participate in online discussions?" and "Did participation in online discussions affect your thoughts and result in behaviour change?" The first question contained 7 items related to preferred motives (multiple-choice), while the second was a five-point Likert-scale-type question.

3.4 Datasets

The survey data was digitised and analysed with the help of STATA/SE 16.1. There was no missing data, whether user and system-based. Indeed, the response rate from the 201 respondents was 100 percent. A reliability test was conducted to ensure that the data had internal consistency. Regarding the validity of the analyses of the data generated through Likert-scale-type questions, we used mean values and t-tests. In addition, descriptive analysis enabled us to disentangle the demographic characteristics of the respondents and their means of preferred motives.

4 RESULTS AND DISCUSSION

4.1 Demographics of the sample

Table 1 shows the characteristics of respondents who responded to the SurveyMonkey questionnaire used for this study. There were 49 (24.38%) females compared to males which accounted for 76 percent of total respondents in this study. Many factors could explain the low representation of women in the survey. First, literacy rate among Afghan women is abysmally low at 29.8 percent compared to that of men, which stands at 55.48 percent (World Bank 2018). Second, reports from the Afghanistan Communication and Information Technology Ministry (MCIT) statistics indicate that access to internet and smartphones is lower among women (smartphone users = 32%; access to internet = 39%) compared to men (smartphone users = 68%; access to internet = 61%). Note that this comparison is based on all internet users which only constitute 11.4% of Afghanistan's population to the physical space. Finally, social and cultural barriers such as the pressure of care and domestic work may adversely affect the time that women could devote to online networking and discussions (Sahab et al. 2016). These factors cumulatively exclude women from meaningful engagement in economic, social, and political spheres of life compared to men (Breath, 2012).

The highest number of respondents ($n = 90$; 44.78%) out of all the six age groups were 25-34 years old. This finding may be explained by the demographic composition of the Afghan population, with a large representation of young people (NSIA, 2021). It may also be due to the stylised fact that young people (millennials) tend to be more technologically curious and savvy than older generations (Volkom et al. 2013). Most respondents ($n = 78$; 38.815) held a bachelor degree. This may have been informed by our use of an online survey forum which tends to be biased in favour of educated individuals, compared to the use of conventional survey tools during field visitations (Sahab et al., 2015, 2016). Most respondents were employed (65.98%) while a considerable number of them were still in school (20.10%).

4.2 Respondent's motives for participating in online discussions

The analysed results on respondents' motivations for participating in online discussions are shown in Fig. 1. The results showing the age-specific motivations of the respondents are shown in Fig. 2. Finally, the results on the gender-specific motivations for participating in online discussions are shown in Fig. 3.

		Participant	Percentage
Valid		201	100.0
Excluded		0	0.0
Age	18 to 24	27	13.43
	25 to 34	90	44.78
	35 to 44	65	32.34
	45 to 54	13	6.47
	55 to 64	5	2.49
	≥65	1	0.50
Gender	Female	49	24.38
	Male	152	75.62
Education	Less than High School	2	1.00
	High School	28	13.93
	College	53	26.37
	Bachelor	78	38.81
	Master's	34	16.92
	PhD or Higher	6	2.99
Employment	Government Employed	18	9.28
	Private Sector Employed	48	24.74
	Self Employed	62	31.96
	Retired	4	2.06
	Not Employed	23	11.86
	Student	39	20.10

Table 1. Characteristics of the respondents for the current study (n = 201).

The analysis of the motivation to participate was predicated on multiple response questions, as mentioned in Section 2.2. Cash prize for winners (66.67%) and certificate for winners (50.75%) were the first and second preferred motivators, respectively, for participating in online discussions among the respondents from a list of seven motivators suggested in the questionnaire (Fig. 1). However, the motivations for participating in online discussions do not significantly differ based on respondents' age groups or gender (Figs 2-3).

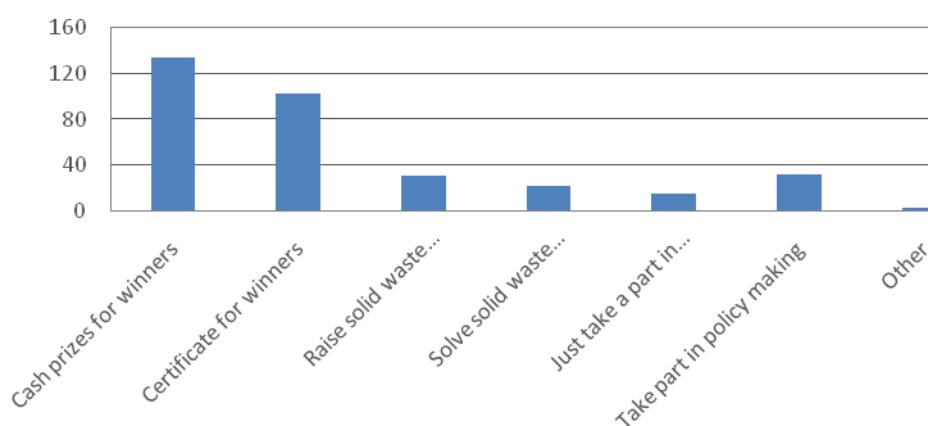


Fig. 1: Number of respondents motivated by each motivator

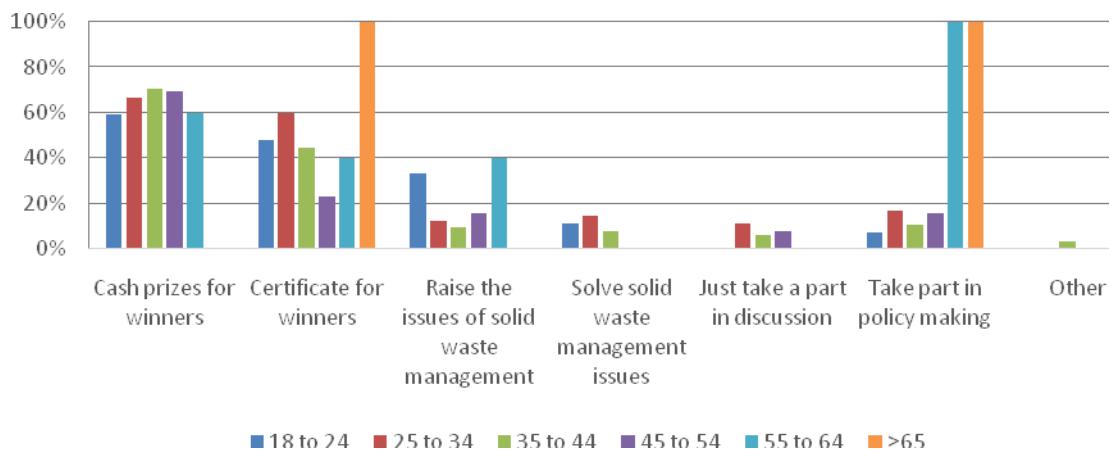


Fig. 2: Motivational factors to participate by age groups

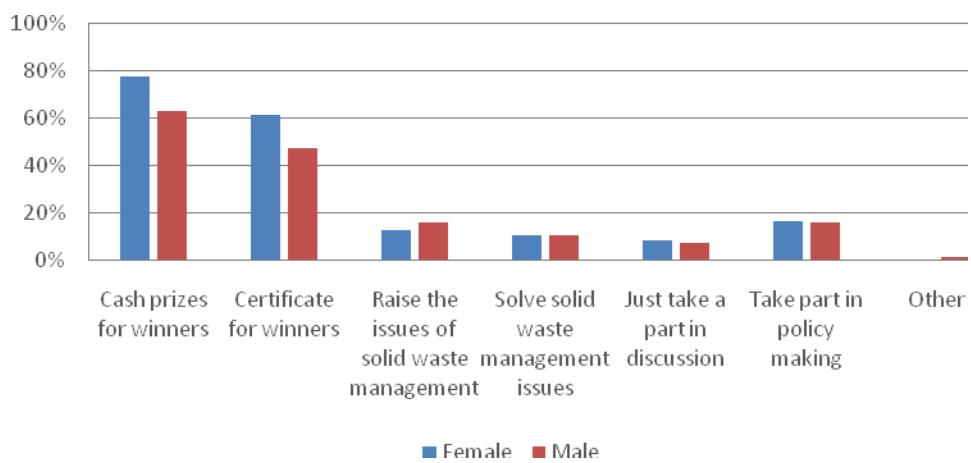


Fig. 3: Motivational factors to participate by Gender

4.3 Social influence of participants and overall discussion

The analysed results on the influence of other participants in online discussions are shown in Fig. 4, while those related to the prospect of attitudinal and behavioural change in relation to SWM due to participation in online discussions are shown in Fig. 5.

To understand the influence, we used two single choice questions. We asked participants if they were influenced by other participants' opinions and if the discussions brought any changes in their behaviour regarding waste management. We demonstrate that the opinions of other participants expressed in online discussions had a significant influence on the participants, as alluded to by 51.24 percent of the respondents who reported a great deal or a lot of influence. Another 46.27 percent of them claimed to be moderately influenced by other participants' opinions, while only 2.49 percent reported little or no influence of online discussions on their opinions toward SWM (Fig. 4). However, there was no evidence that the age or gender of respondents affected their perception of the influence of online discussions on their opinions. The results of the question about the behaviour change (Fig. 5) was similar to that of influence of online discussions on participants (Fig. 4). Specifically, most participants (51.74 percent) reported that the discussions had changed their behaviours a great deal or a lot, while 43.28 percent opined that their behaviour had moderately changed. However, 4.98 percent of the respondents believed that their behaviour had changed only a little or remained unchanged. Like the reciprocal influence of the opinions of other participants in the online discussions, we did not find any significant difference in behavioural change towards SWM based on respondents' ages and gender.

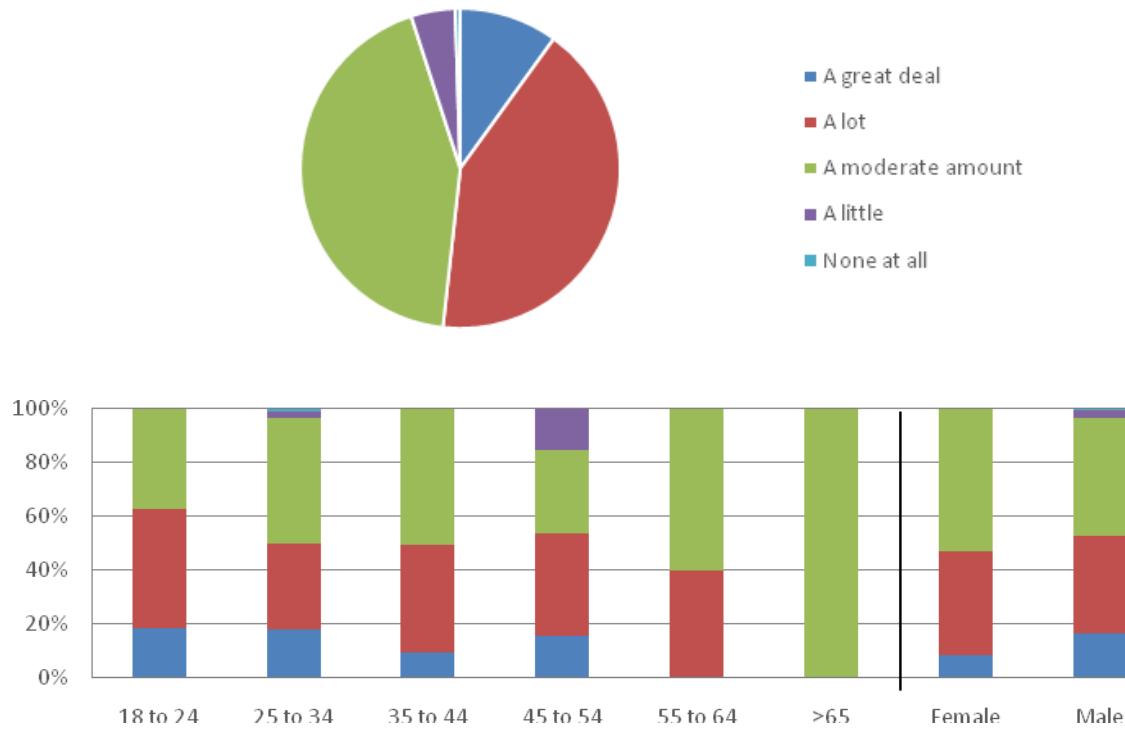


Fig. 4: (top) Overall influence of other participants' opinions in the online discussion, (bottom) Influence of other participants' opinions by age and gender

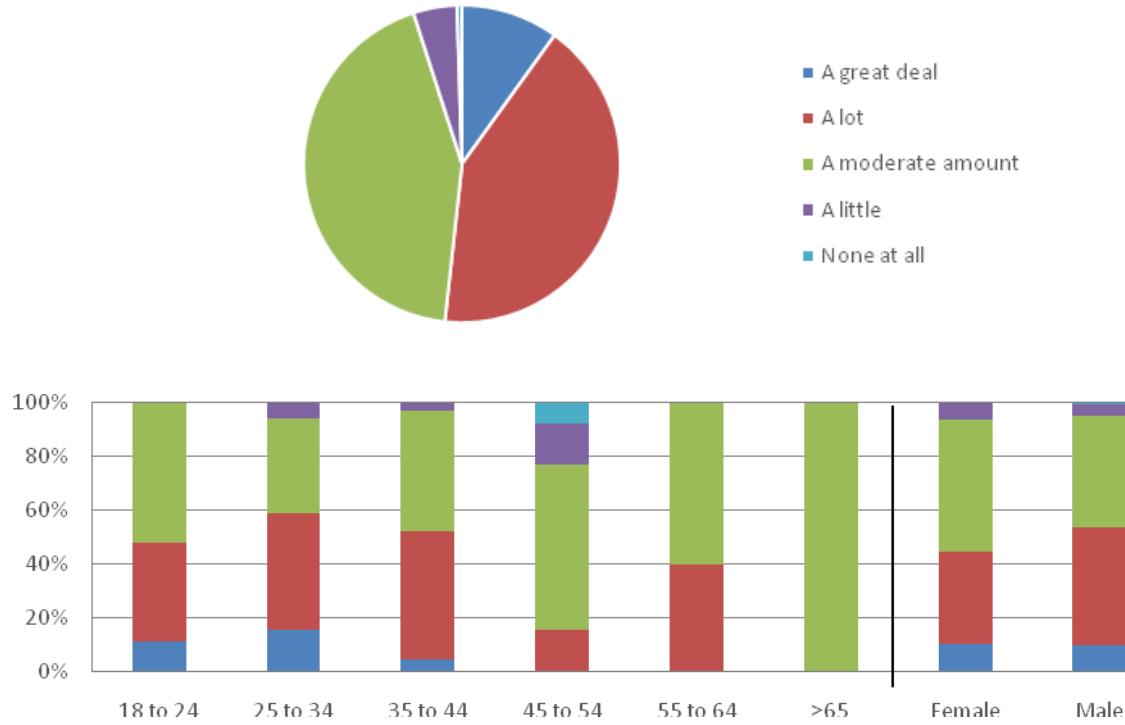


Fig. 5: (Top) Overall behaviour change toward solid waste management due to participation in the discussions, (bottom) behaviour change on solid waste management caused by age and gender.

5 CONCLUSION

This paper proposes a municipal idea contest project to discuss a real urban issue of Kabul City, solid waste management (SWM), using our proposed online forum in an incentivized setting. Our research project's main approach was not only harnessing the wisdom of crowd for offering SWM innovative solutions to KM, but

also, we aimed at identifying the factors as motives that are most likely to stimulate user's participation, and their engagement in activities in online discussions. In particular, we designed a questionnaire as a post-discussion survey instrument and called all subjects who had taken part in the municipal idea contest project online discussion to take part.

According to online survey (201 respondents who had taken part in both online discussion and post discussion survey), the financial (66.67%) and social (50.75%) incentives were the two primary motivators of respondents' decision to participate in online discussions of all the seven suggested motivators in the study. This demonstrates that the use of incentives (monetary and social rewards) in asynchronous online discussions could facilitate interactivity and mutual exchange of opinions among users. We also showed that these motivators do not significantly differ based on respondents' age groups or gender. Finally, our study shows that the social influence of online discussions on participants ranges from moderate to a great deal, but this effect does not vary significantly based on participants' age groups or gender. These findings offer promising prospects for scholars, researchers and policy makers on how best to engage people in mutually beneficial online discussion platforms. Moreover, like the KM's initiative to improve SWM which has been the focus of this study, efforts to track and change citizens' knowledge, attitudes and behaviours towards progressive dimensions through advocacy could benefit from the findings of this study.

After all, this is the first study of its kind conducted to offer an innovative solution for Kabul city SWM which was established through crowd and the medium of online discussion support platform. Considering the cross-sectoral aspect of harnessing the wisdom of crowd, the finding of this study will contribute to conducting crowdsourcing projects to many other areas of Kabul City such as water, transportation and the environmental issues.

5.1 Limitations and future perspectives

The main limitation of our study is perhaps the use of open and convenience call for post-discussion survey. Although it may have become popular as a formal method of accessing respondents (female and males) and collecting data on various issues, the fact that Afghans tend to participate in incentivized tasks in online communities made the sample collection a bit difficult for post-discussion survey. The post-discussion survey could also benefit from incentives. In addition, Afghan males tend to predominate in online communities made the sample a bit biased in their favour compared to females due to sociocultural constraints on women's use of time and networking. Therefore, we hope to consider including two equal sample strata (splits) to female and male respondents, using a stratified random sampling technique in our future work. Furthermore, we believe that the skewed sample in favour of highly educated respondents constitute a limitation to the representativeness of our sample. Therefore, we shall also endeavour to boost our samples to incorporate respondents with different levels of education, especially as waste management issues, the focus of our online discussions in this study is generally presumed to be more pressing among poorer and less educated population. Finally, we plan to conduct further experiments, using two groups of respondents: a controlled group without the prospect of benefiting from any incentive mechanism for participating in online discussions and a treatment group with the prospects of benefiting from incentive mechanisms for participating in the discussions. This will enable us to provide a more robust statistical evidence on the actual determinants of participation in online discussions based on the data generated from the post-discussions survey.

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