

# What makes a Participative Tool Elicit more Sample Views? Discussion with Supportive Means for Mutual Benefit

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## 1 ABSTRACT

Online discussion forums and survey applications are being used to elicit the opinions of people in online communities that could be used as the observation data for research and development. However, online collaboration-related problems such as low level of interest to participate and interaction among users arise due to the absence of mutual interests in the design of some of these tools. Many researchers have also found recruiting subjects for their studies through these tools very difficult, particularly in less developed countries like Afghanistan. Consequently, it is critical to find approaches that incorporate some incentive mechanisms in order to stimulate participation in these forums, thereby serving the mutual benefits of researchers and their subjects/participants. Incentive mechanisms play a prominent role in stimulating users' intrinsic and extrinsic motivation to participate in online forums and enhance interactivity. However, the incentive mechanisms with appreciable prospects for stimulating the participation and interactivity of people in online forums remains poorly understood, and therefore has not been subjected to experimental comparative validation.

This paper highlights how financial motivation could serve as a supplemental incentive to virtual incentives in an online discussion forum. Towards that end, the authors conducted a comparative validation exercise/experiment with online communities in Afghanistan to assess how an efficient motivator could be utilised to increase the overall participation of people with shared interests in online forums. In particular, online discussions were conducted, using a discussion forum with and without incentive, and an online survey was conducted using an online questionnaire without incentive. D-Agree was used as the online discussion instrument while SurveyMonkey associated with SVMK Inc. was used as the survey instrument for this study. The duration of data collection for each method was 17 days. We aimed to find out the research methodological data collection and participative tools which ensure online communities' mutual benefit and stimulate quality participation and sharing of opinions. Based on the discussions and survey annotation files observation, and quantitative analysis of participants, we identified the participation and discussion performance metrics that describe the viability of the discussion forum with incentives as the most efficient method for increasing overall forum participation since it outperformed the other two used in the experiment: discussion and survey forums without incentives. In addition, our quantitative analysis of participation from discussion and survey forums without incentives revealed that participation in online discussions without financial incentives, but with virtual incentives is higher than online survey forum without both incentives.

Keywords: discussion system, data collection, Online survey, Online discussion, online participation

## 2 INTRODUCTION

Following the proliferation of the Internet, online forums for various discussions, including questions and answers (Q & A) sessions are increasingly being used by researchers, policy makers and other stakeholders for data collection purposes (Haqbeen et al. 2021). Unlike conventional methods, this technique facilitates the collection of data across time and space in a cost-effective, rapid and efficient manner, although it may also require the use of some forms of motivators to encourage research subjects to provide meaningful responses (Hossain 2012; Ghosh and Kleinberg 2013; Jain et al. 2014; Ito et al. 2014). In particular, famous extrinsic motives as financial, social, technical and organisational perspectives have been introduced in order to stimulate people's intrinsic and extrinsic motivation to participate in online forums. Monetary rewards and other fringe benefits could be said to be constitutive of financial motivation, while fulfilling the desire to learn and improve one's abilities, sharing knowledge and acquiring experience may be considered forms of social motivation (Hossain 2012). Virtual incentives such as ranking systems (Takahashi et al. 2016) and gamifications (Dai et al. 2016) are some examples of technical motivations used in online forums, while organisation ranking prospects and acknowledgment processes are considered as organisational motivations.

The existing research (Hossain 2012) emphasises that both intrinsic and extrinsic motives influence user's propensity for engaging in interactivity. Personal interests and hobbies are some examples of intrinsic

motivation, while extrinsic motivation relates to the expected compensation associated with engaging in that interactivity or work. Financial motive is generally viewed as a core extrinsic motive because it increases someone's interest to innovate and collaborate. This study is guided by the following two questions.

Research question 1: What effects do the change from conventional online discussions with only virtual incentives to online discussions with financial incentive have on peoples' willingness to engage in interactivity in an online environment considering least developing countries?

Research question 2: Based on the authors' comparative experiments of the performance metrics of online discussion and survey forums, which is a better and more efficient data collection and observation data-assisted tool in less developed countries like Afghanistan?

The answers to the two questions above require a comparative validation exercise/experiment. This study aimed to verify the effects of incentive on the willingness to engage in online discussions and overall discussion performance. We conducted three social experiments on online forums, where online users were invited through an open convenience call to join and post their opinions on the forum. We first had an online discussion without financial rewards/inducements for a period of 17 days and then, conducted another social experiment with incentives to ascertain if the online community users will participate higher or lower than the previous experiment where no incentive was attached. We then conducted the third social experiment using a survey forum without incentive to investigate the optimal use of a forum (discussion and questionnaire) as data collection for analysis and research. Our findings show that attaching incentives to online discussion increases online activity (participation and discussions) while online discussion without financial incentives was associated with lower participation and less discussions. However, online discussions without incentive activity outperformed online survey in terms of users' engagement and participation.

## 2.1 Problem identification

Online discussion and survey forums are widely used at individual and organisational levels to collect people's feedback on a variety of topics ranging from poverty, inequality, climate change to organisational policy development. The data gathered through such feedback are further analysed for academic or policy purposes depending on the interest of the researcher (Halim et al. 2018; Ito et al. 2020). In particular, the outbreak of the COVID-19 pandemic transformed researchers' approach to data gathering through conventional means (through physical presence in the field), as many of them were compelled to embrace online data collection technique, using online forums (Haqbeen et al. 2020c; Haqbeen et al. 2020d). However, a major concern in leveraging online platforms for data collection purposes is how to foster users' engagement and enhance discussions outcomes (Brabham 2013). Moreover, data collection through online forums is often associated with lack of interest on the part of the targets/respondents, digression of discussions, and low survey participation and response rates (Tavanapour et al. 2019). Incorporating different incentive mechanisms into data collection endeavour through online forums have often been used to encourage users to participate and ensure that the discussions stay focused. However, identifying the incentive mechanisms with greater prospects of generating users' interests and facilitating robust meaningful discussions that both meet the mutual needs of the researcher and those of the research targets/subjects and sociocultural context of the research has received less empirical scrutiny.

This study sheds light on the following questions: (1) Are online discussions which incorporate incentive mechanisms more effective/beneficial for/to the researcher than online discussions which do not incorporate incentive mechanisms in terms of eliciting users' interests and generating robust discussions among them? (2) How beneficial/effective are online discussion forums compared to online survey forums? In view of the above-stated questions, an open-call idea was placed on social media to invite users of online communities to join discussion and survey forums by the authors in collaboration with the Kabul Municipality.

## 3 BACKGROUND

In research communities, researchers often outsource the sampling for their studies to a company in order to reach targeted audiences on online platforms (e.g. survey and discussion forums). For example, they could buy targeted responses by running advertising campaigns to reach a targeted audience, and then build up these audiences (e.g. buying targeted responses on SurveyMonkey, buying Likes and boosting posts on

Facebook and Fiverr<sup>1</sup>). However, accumulating audiences through these platforms does not necessarily suggest mutual benefit or guarantee social good to the researchers and their subjects, as the business and the company whose account monies are paid into are often the beneficiary rather than those who accessed the posts.

Unlike using these services, where participants reached/invited gather to share their opinions and answer questions without receiving any incentives, online discussion platforms focus on promoting extrinsic motivation by utilising incentive mechanisms. In this context, technical motivators (e.g. virtual incentives, ranking and gamification) are introduced into online discussion to stimulate participation and discussion. The ranking system is a virtual rewarding point system for posting, replying, and liking within a discussion thread. As a result, users are better motivated to take part in discussions when observing other users' participation (e.g. Sun et al. 2011; Hadfi et al. 2021). However, incentive bias cannot be avoided because each participant may be influenced by different motivators in the process of engaging in discussions. In addition, some methodologies are relevant to categories of people's beliefs and motivations, and some are not. Moreover, some methodologies are biased in favour of the researcher's interests while others reduce the researcher's influence over the responses of participants. Additionally, some tools ensure mutual benefits to promote social good, while some others are just one-sided. Thus, researchers use different methodologies, which are appropriate for their study, geographical area, online communities and sociocultural context as data collection tools. As a result, it becomes increasingly necessary to study different methodological tools used for gathering sample views while conducting online surveys and discussions.

### 3.1 Online discussion forum

An online discussion forum (Malone et al. 2009; Klein 2011; Introne et al. 2011) is a discussion site on the internet where users can discuss specific topics by posting a series of messages while a facilitator moderates (Ito et al. 2014) and lead the discussion in order to arrive at innovative solution (Haqbeen et al. 2020e). The message posted on the discussion site could be used as the data for analysis just as interactions among the users could be used as the observation data (Haqbeen et al. 2020a). Online discussion forums are often established intentionally by a research team to study a topic of interest (Haqbeen et al. 2020b). Usually, participants are recruited through Internet communities (e.g., Facebook, Twitter) or in community settings. Typically, when participants visit the online site, they are assigned user identifications and passwords through which they could access the online forum site. Researchers usually post discussion topics and/or prompts so that the participants could initiate their discussion on the specific topics and/or prompts. In addition, researchers use social platforms data such as Facebook and Twitter for qualitative and quantitative research (Franz et al. 2019). These sources of data, their model and straightforward access application programming interface (API) (Antonakaki et al. 2021) naturally allow researchers to unpack deep meaning within a selected group of people and probe for underlying values and assumptions (Yauch and Steudel 2016), as well as obtain more novel information, unlike using other methods such as online surveys (Yauch and Steudel 2016). However, because of the nature of these social platform data (e.g. Facebook), research method may require additional adaptations to appropriately reconcile textual interactions with the accuracy and usefulness of the subjects' responses (Atieno 2009). As a result, it become critical to manage discussion annotation and extraction by setting specific discussion, using discussion support system (Haqbeen et al. 2021).

### 3.2 Online survey forum

An online survey forum is a site on the internet that allows a one way or asynchronous method of insight collection for qualitative and quantitative research (Im and Chee 2006; Antonakaki et al. 2021). In particular, famous online survey forums such as SurveyMonkey (Halim et al. 2018), Google forms (Nurmahmudah and Nuryuniarti 2020), and SurveyGizmo (Halim et al. 2018) have been developed to support online survey service solutions. Unlike online discussion, surveys are simply not intended to facilitate two-way communication and engagement. Online surveys capture immediate responses and reactions to structured questions, but they do not promote the same level of discovery generated from a two-way discussion. Thus, an online survey doesn't give us the same depth of insights that could be gotten from discussion forums (Yauch and Steudel 2016). However, there is no doubt that online surveys are an easy way of facilitating a

<sup>1</sup> <https://www.fiverr.com>

one-way question and answer session with many people at the same time compared with in-person survey and interview (Sahab et al. 2016), but it does require you to have a good grasp of the intended audience and more importantly, the objectives of your survey.

## 4 METHODOLOGY

### 4.1 Study area

After careful consideration, a completely open online asynchronous environment was used as the study area for this study. The Afghan online community was informed through an open call for participation in collaboration with Kabul city, without assuming, of course, that all citizens have access to internet services. Kabul, Afghanistan's capital city, considered the main and central hub for the country's 32 million people (NISA 2021) was chosen as the focus of the study. The city was chosen due to its accessibility to all Afghan online population and the authority's partnership to carry out the online experiment. Internet access rate in Afghanistan was estimated at 11.4% as of 2017 (World Bank 2017). The majority of residents in Kabul city lacks internet facilities, particularly using smartphones. Thus, only internet users (citizens) in online communities whose links were widely disseminated, and who consented to participating in the discussions and surveys took part in the experiments for this study.

### 4.2 Sampling method

This study was conducted in a large-scale online environment. Our general multimethodologies (Brewer and Hunter 1989; 2006) aimed at conducting experiments, using online discussion and survey forums. For the discussion forums, two settings were considered: (a) a discussion without financial incentive, and (b) another discussion with financial incentive. For the online discussions, D-Agree (Ito et al. 2020; Haqbeen et al. 2020e), an online discussion support platform was used to conduct the two discussion experiments. A total of 741 people volunteered to participate in the online discussion without financial incentive while 1402 people featured in the online discussion with financial incentives. D-Agree, is a text-based online discussion platform, which is anchored on support and facilitation means developed by our team for hosting large-scale discussions or deliberations. We chose D-Agree because of its ease of use at any place and time, its facilitation support (Hadfi et al. 2021) and its ability to host large-scale discussion (Haqbeen et al. 2020a). More importantly, D-Agree was chosen because its incentive function could easily support the implementation of our experimental settings (discussion with and without incentives). For instance, it allows us to see the quality of opinions and their ranking. It also generates post-discussion annotation files that allow us to easily undertake performance metric analysis. The user interface (UI) of D-Agree is shown in Fig. 1.

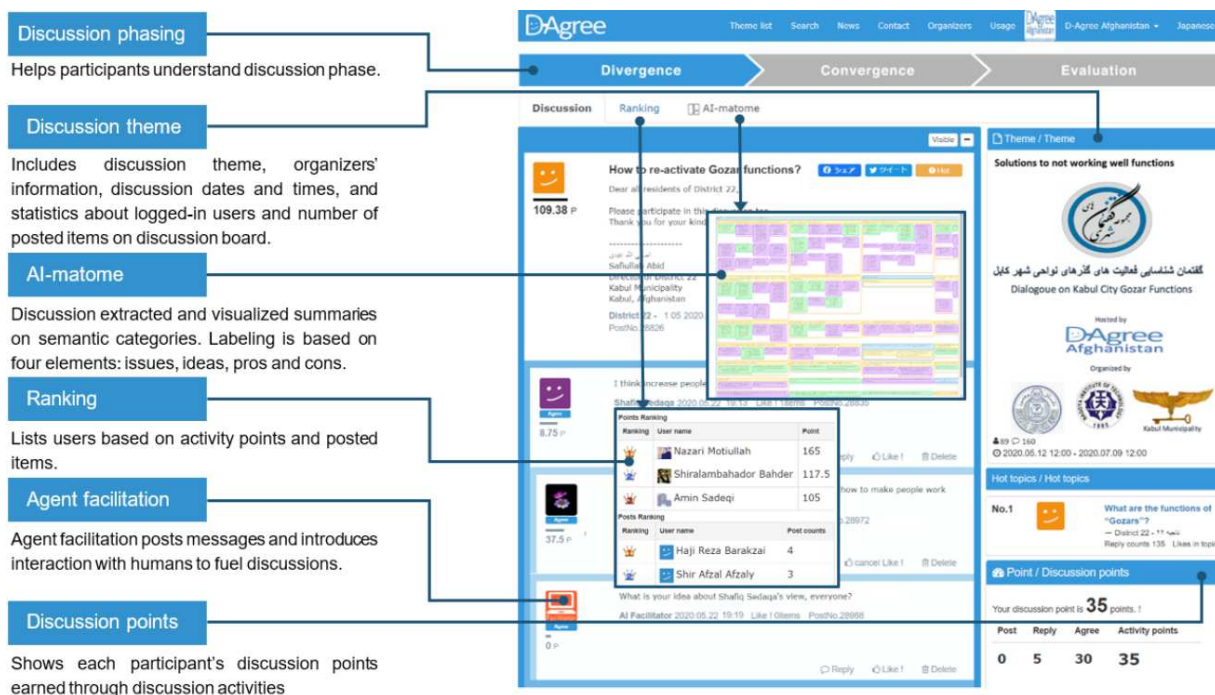


Fig. 1: A snapshot of user interface in D-Agree, adopted from Haqbeen et al. 2021, p. 16.

For the online questionnaire, SurveyMonkey, an online survey forum was used to conduct a question answering experiment. SurveyMonkey (Abd Halim et al. 2018), which was founded in 1999, is a cloud-based software developed by Momentive Inc. (Formerly SVMK Inc.). The software specialises in providing either free or licensed, customisable online surveys as well as a suite of premium back-end applications that include data analysis, sample selection bias elimination, and data visualisation tools. We used a licensed version of the software to design our questionnaire survey and sent the link to anybody who participated in the online discussions, using D-Agree. The registered users who participated and filled out the online survey were 140 (female = 38; 27.1% and male = 102; 72.9%). We chose SurveyMonkey because of its worldwide accessibility to anyone who has access to internet connectivity (Abd Halim et al. 2018).

Since we used a convenience sampling technique (see Baltes and Ralph 2020) to collect samples for our three research settings, online open-call (Brabham 2013) links were widely disseminated to allow anyone interested in the study to freely join the discussions and surveys (Haqbeen et al. 2021).

### 4.3 Study samples

The tool and samples of respondents who consented to participate in the three experiments are summarised in Fig. 2.

The experiment on discussions without incentive which took place between May 12 and May 28 2020, (17-days) generated 874 opinions from 741 registered participants. The topics of discussion during this period focused on various topics, particularly neighbourhood and community planning. Residents from 22 urban districts discussed the same topics within the same time and based on each participant's engagement in online discussion, they were scored and ranked by the system in real-time.

On the other hand, the experiment on discussions with incentive, which took place between September 1 and 17, 2020 (17-days), a total of 4709 opinions were generated from 1402 registered participants. Similarly, the topics discussed revolved around solid waste management and community planning. Residents from 22 urban districts participated in these discussions within the same time. Participants were then scored and ranked by the system in real-time based on their engagements in online discussions. In addition, we linked the ranking system to monetary rewards offered to motivate participants to freely discuss among themselves. These rewards ranged from cash prizes of 30k, 20k to 15k Afs ( $\approx$  385, 257 and 192 USD) as well as presentation of certificates to the top ten most active discussants.

For the third experiment, the online survey started on October 8 and ended on October 24, 2020 (17-days). A questionnaire (including one open-ended question and other closed-ended questions) were used as instruments for data collection. 140 participants (female = 38; 27.1% and male = 102; 72.9%) participated in the survey. The questionnaire consisted of 23 questions, which were divided into different sections, including: (i) personal and demographic information ( $n = 6$ ); (ii) preferred activities in online discussions ( $n = 6$ ); (iii) preferred elements in online discussion forums ( $n = 10$ ); and (iv) an open-ended question related to SWM. We included other questions in some sections (ii and iii) for the purpose of another research, but for this paper, we only considered the number of participants and response rate, particularly responses to the open-ended question.

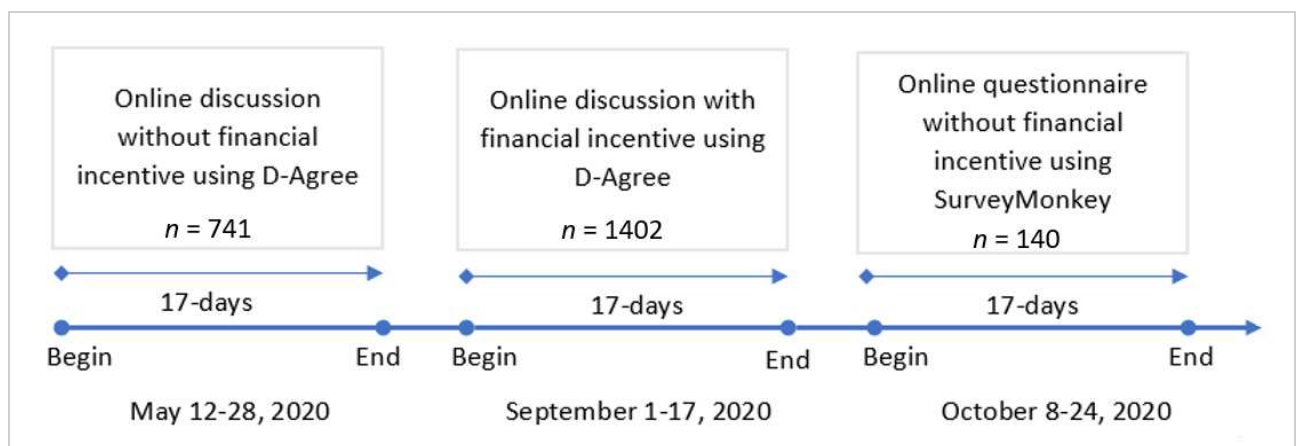


Fig. 2: Timeline of data collection using online discussion forum with two settings (with and without incentive), and online survey forum

We posted the three experiments on Facebook by boosting it through Facebook ads, prompts and open-call invitation to users (Brabham 2013). We did not include any financial incentives in the request for participation for the first and the third experiments. The average time expected of a respondent to login and participate in online discussion was estimated at between estimated 10 and 150 minutes, while the average time projected for the completion of the online questionnaire was 3 to 5 minutes.

#### 4.4 Data collection and analysis

To reiterate, this study seeks to achieve two objectives: (a) to determine the effect of incentives on participation and interactivity of respondents in online forums based on discussion annotation files and; (b) to ascertain the data collection and observation tool with better prospects (that is more effective) for increasing the mutual benefits of researchers and participants in online forum discussions.

The data collection lasted for six months, corresponding to the aforementioned three experiments of the research. To assess the effect of incentives on participation and interactivity of respondents, we analysed and compared the annotation files, using performance metrics like the number of participants and posts or opinions shared during the experiments. However, we did not analyse the qualitative data across two settings in this study, as it will be incorporated into another study.

To ascertain the effectiveness of the considered data collection tool for empirical research studies in Afghanistan as a less developed country, we compared the numbers of participations in each online experiment and the interest that each discussion generated from the people (respondents or participants). We used the discussion annotation datasets downloaded from D-Agree (Table 1), and the response data exported from SurveyMonkey.

Items	Description
Entry ID	Integer that identifies parent post
Title	Title of post
Body	Original posted opinion
Thread ID	Integer that identifies post as a thread
Parent ID	Integer that identifies a post and links it to a parent
Name	Author of post
User group	Integer that identifies a group
Labeling confidence	Node extraction result
Entry ID	Integer that links a child post to a parent post
Post time	Time of opinion's submission
Text	Extracted node contents
Node ID	Integer that identifies a node
Type	Type of label
Type confidence	Set of node extraction results
Point	Evaluated points from user activities

Table 1. Collected data for online discussion forum

#### 4.5 Experimental setup

In the first online discussion, conversational agents and discussion scoring system were activated as artificial facilitation and virtual incentive to stimulate data collection. Conversational agents are chosen to facilitate discussions and stimulate participation (Haqbeen et al. 2020a). The ranking system was chosen to assign rewards as points for posts, as well as replies, and likes received by participants in a discussion thread. We thought these points might simplify the recognition of active discussions and potential ideas as well as improve one's abilities through knowledge gains. As a result, through these settings we might be able to stimulate extrinsic motives. For the second experiment, we added a financial (e.g. monetary reward) besides putting in place all the experimental set-ups for the online forum mentioned above. We defined this as online discussion with incentive which promote mutual benefits in this study. We decided to provide cash prizes to the top three active discussants and certificates to the top ten discussants. The active discussants were analysed based on their realtime generated discussion scoring, using a system ranking. For the third experiment, we conducted an online survey, using a questionnaire following the same strategy used for

soliciting for participation in the two experiments mentioned above. However, we did not introduce any virtual or financial incentive as extrinsic motivators to stimulate participation here.

## 5 RESULTS

The results of the quantified data on the online discussion with and without incentives and online questionnaire survey are summarised in Table 2. The results of the quantified number of daily participation in online discussions are shown in Fig.3 while the comparisons of the associated number of posts in the two discussion forums (with and without incentives) are shown in Fig.4.

To address research question 1, the performance metrics (number of participation and posts) of participants in the online discussions with and without incentives were measured and compared in Section 5.1. Similarly, to address research question 2, we compared the participation and survey completion rates in the online survey without incentives with participation rates in online discussion forum without financial incentives in Section 5.2.

Means	No. of participants	Average logins per day	No. of posts	Average posts per day
Online discussion forum without financial incentive	741	43.58	874	51.41
Online discussion forum with financial incentive	1402	82.47	4709	277
Online survey forum	140	8.24	-	-

Table 2. Characteristics of the respondents for online discussion forum without and with incentive, and online survey forum.

### 5.1 Comparison between number of participants and posts generated in online discussions

The quantified data in Figs. 3 and 4 show the daily number of participation and participants' posts generated in online discussion with and without financial incentives. During the 17-day period, 741 and 1402 users created accounts and participated in the online discussion without and with financial incentives, respectively. We obtained 874 opinions from registered participants in the first experiment, which were submitted as initial posts on D-Agree, and received 4709 opinions from registered participants in the second experiment. We conducted t-test to statistically determine if there was a difference between the means of the number of participation rates and number of posts, being the performance metric used to assess the effectiveness of the discussions in the two settings. The experimental results suggest that online discussions with financial incentive was more effective at engaging people in discussions and citizens' participation ( $n = 1402$ ; avg logins per day = 82.47) than one without incentives ( $n = 741$ ; avg logins per day = 43.58).

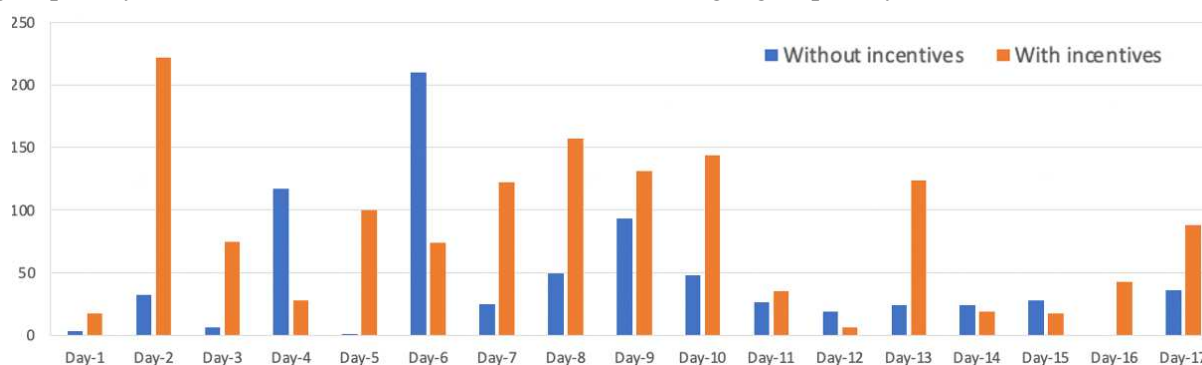


Fig. 3: Participants daily login on online discussion forum (with and without incentive)

Furthermore, the average daily opinions posted in online discussions with incentives was 277 (Fig. 4), which exceeded the average daily opinions for discussions without incentives (avg posts per day = 51.41). Thus, participants were clearly motivated to spend more time exchanging ideas and opinions in online discussions with incentives than one without incentives. This difference in means of participation and discussions could be attributed mainly to the financial inducements that accompanied the online forums with incentive.

The main purpose was to study the effects that the change from conventional online discussions with virtual incentives to online discussions with financial incentive have on people's interest in and interactivity in online environment in less developed countries. From analyses so far, we conclude that financial incentives motivate people to engage in online discussions. Therefore, financial incentives have a great potential to increase participation in online discussions and the rate at which participants share or express their opinions or ideas when online crowdsourcing projects are implemented.

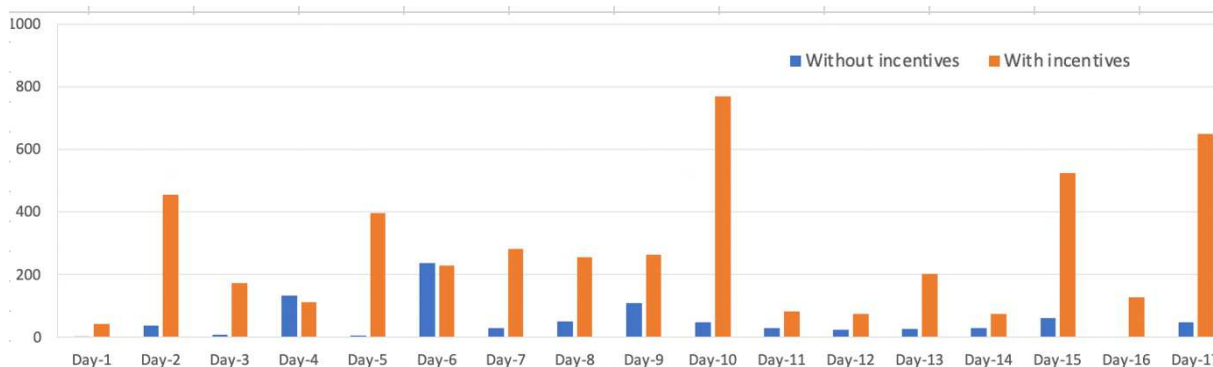


Fig. 4: Number of daily posts from participants in the online discussion forums (with and without incentives)

## 5.2 Comparison between the numbers of people/respondents who participated in online discussion and survey forums

We compared the rate of participation in online discussion and questionnaire without financial motivators. Therefore, we compared the first experiment (online discussion without incentive) with the third experiment (online survey without incentive) to ascertain the research methodological data collection and participative tool with better prospects to provide mutual benefits for online communities and increase the quality of their participation and willingness to share their opinions in online forums (Research question 2). Regarding participation in online discussion and online survey forums, we conducted a t-test analysis to examine if there was any significant difference in the means of the response and participation rates between online discussion and survey forums. The result indicates that the average participation rates of citizens/respondents were higher in online discussion, using discussion forum ( $n = 741$ ; avg logins per day = 43.58) than the citizens/respondents' participation rates ( $n = 140$ ; avg logins per day = 8.24) of questionnaire survey, using the online survey forum. This difference could be attributed to non-interactive (one-sided communication) attribute of online surveys, unlike online discussions, which are reputed for being interactive.

In addition, we considered the fourth section of the online survey forum, which contained open-ended question while looking at the responsiveness rate of participants. Accordingly, comparing the responses from sections i to iii, with those of section iv, which contained an open-ended question, the participants responsiveness rate was found to be significantly lower in the open-ended question (answered = 14; skipped = 126) than other three sections (avg = 139.55)

The results of participants' responses in the online questionnaire are summarised in Table 3.

## 6 DISCUSSION

The analyses and results of the discussion forum with financial incentive suggest that the rate of participation (number of logins and posts) is higher in online discussions accompanied by incentive compared to online discussions without incentive (Fig. 3). This finding reinforces the role of extrinsic and intrinsic motivators in online discussion with financial incentives, unlike participation in online discussions without financial incentives, which only provide virtual incentive. Indeed, online discussions with financial incentives provide mutual benefits for both the city and citizens/participants, while discussions without incentives might be perceived by citizens/participants as providing one-sided benefits to the city even though participation in them may be portrayed as a two-sided communication and engagement.

With respect to participation in online discussion forums without financial incentive and online survey forum, the average participation rate of citizens/respondents per day was significantly higher in online discussions (avg = 43.58) than that of online survey (avg = 8.24). The reasons for this may be: (1) the greater



interactivity of online discussions since people could read, react and reply to other participants' and experts' opinions; and (2) the attractiveness of D-Agree at facilitating discussions, providing incentives by assigning virtual points and ranking participants based on their level of interactivity on discussion platforms. Thus, the participation rate was higher in a two-sided communication (online discussion) than in a one-sided communication (survey questionnaire).

Section	Question number	Answered	Skipped
i. Demographic information ( <i>n</i> =6)	Q1	140	0
	Q2	140	0
	Q3	140	0
	Q4	135	5
	Q5	139	1
	Q6	140	0
ii. Preferred activities in online discussion ( <i>n</i> =6)	Q7	140	0
	Q8	140	0
	Q9	140	0
	Q10	140	0
	Q11	140	0
	Q12	138	2
iii. Preferred elements in online discussion forum ( <i>n</i> =10)	Q13	140	0
	Q14	140	0
	Q15	138	2
	Q16	140	0
	Q17	140	0
	Q18	140	0
	Q19	140	0
	Q20	140	0
	Q21	140	0
	Q22	140	0
iv. Open-ended question ( <i>n</i> =1)	Q23	14	126

Table 3. Characteristics of the respondents for online survey forum for this study (*n* = 140).

The experimental results show that online discussions were more effective at engaging people/respondents in discussions irrespective of whether or not incentives were attached to these discussions than online survey forums. Furthermore, the average daily opinions posted in online discussions exceeded the average rate of responsiveness to questions in online survey forums.

### 6.1 Study limitations and suggestions

Although online-discussion platforms could provide efficient media for collecting people's insights, in addition to being used as observation data for research and development purposes, the method may be replete with several limitations that need to be addressed in future works. For example, online surveys may allow for the collection of specific answers, using closed-ended questions, but in online discussion, getting the discussion focused in order to get meaningful responses may be a challenge due to the openness (unstructured attribute) of the platform and people's tendency to veer off the discussion paths. To address this challenge, there is a need to keep the discussion questions concise and focused on a particular issue so that people/respondents/discussants could easily participate and share or express their ideas and opinions in line with theme of the discussion. In addition, simply defining a problem or topic as a high-priority one may offer a more promising prospect for generating appropriate and meaningful responses from the respondents/participants (Haqbeen et al. 2021).

Moreover, we believe that selecting an appropriate online methodology that could be used to collect data in Afghanistan may pose many challenges that should be considered in the future. Low literacy rate (43 percent as of 2018) (see World Bank 2018), widespread poverty (the per capita GDP was UD\$508.8 as of 2020) (see World Bank 2020), limited access to internet services (with a penetration rate of 11.4 percent as of 2017) (World Bank 2017) and low level of smartphones ownership are some of the major issues militating against most Afghan residents' participation in online data collection platforms. These constraints require a multiplicity of strategies, including mediation techniques, using telephonic sound recording audio interviews, and then transcribing the audio into texts. The challenges associated with low literacy rate may also be addressed through the use of telephonic conversation technique mentioned above. Most importantly, it would

be useful to consider society-friendly experiments that also offer mutual benefits to both the research community and the online public community.

Note that, gathering people for large-scale social experiments is often a risky endeavour in an unsafe city like Kabul. For this reason, Kabul City authorities do not encourage massive concentration of people in urban districts due to security threats. Moreover, in our previous studies (see Sahab et al. 2015; Sahab et al. 2016), we conducted various surveys, using face-to-face questionnaire to collect data across only five districts of Kabul city. Due to budget, time, and particularly security issues, we were not able to extend the studies beyond these districts, using traditional techniques of data collection. Unfortunately, public apathy towards engagement in research activities was found to impair our data collection efforts during those surveys. Thus, considering Afghanistan's insecurity situation, online forums may provide an effective medium for data collection, with a view to generating observation data for research and development.

## 7 CONCLUSION

In this paper, we conducted three social experiments with different settings in order to explore the effectiveness of various methods of collecting people's insights that could be used as observation data in research and development. In particular, we designed an online discussion with and without financial incentives, using an online discussion forum called D-Agree, and an online survey, using SurveyMonkey as a software/instrument for developing and administering questionnaire in this study.

Results show that participation is higher in online discussions with prospects for financial incentives compared to discussions that incorporate only virtual incentives. This suggests that financial incentive may better stimulate participation and facilitate greater interactivity, as measured by the number of posts and opinions shared among users/participants in online discussion forum. Furthermore, by comparing online discussion without financial incentives, using D-Agree with online questionnaires using SurveyMonkey, we found that the participation rate in online discussion without incentive was higher than that of online survey, suggesting that the D-Agree software is capable of stimulating both participation and solicitation of opinions. This might also be related to use of extrinsic and intrinsic motivations in online discussions compared to the absence of incentives for participating in online surveys.

In all, our findings lead us to the conclusion that both financial and virtual incentives, as well as artificial facilitation approaches offer promising prospects for promoting the effectiveness of data collection in online empirical experiments. Indeed, incorporating mutual benefit rationalisation (by using various incentives, gamification and artificial facilitation) into data collection strategy through online forums may offer better prospect for attracting larger numbers of people to participate in research-based social experiments. Our next step is to examine whether methodological and context-specific peculiarities impacted citizens participation, using more controlled experimental setting. Finally, we plan to investigate further motivational approaches to stimulate discussions in online discussion forums, especially focusing on gender preferences in online discussion and survey forums.

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