Why do Women Volunteer More than Men? Gender and its Role in Voluntary Citizen Reporting Applications Usage and Adoption

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***Abstract*—By researching why citizens are eager to participate in citizen reporting applications, this study contributes to the understanding of citizen-government interaction in open government. Self-determination theory, gender role theory, and social role theory were employed to evaluate the impact of various motivational factors on individual behavioural intentions to participate in citizen reporting applications, as well as the role of gender in moderating their effects. The model was quantitatively tested by collecting 499 responses through a questionnaire from citizens who had previously utilized citizen reporting applications. The model was validated using partial least squares. The findings reveal that social responsibility, output quality, self-concern, and revenge are the motivational antecedents that have the most influence on individuals' motivation to participate in citizen reporting applications managing to explain 65.9% of behavioural intention variances. Social responsibility is the most significant driver when compared to the others. The study also revealed that gender differences moderate the impact of social responsibility and revenge on user involvement in citizen reporting apps. The current study adds to the existing literature on citizen reporting adoption and usage by examining the motivational factors that affect citizens' engagement across multiple contexts and evaluating the effect of gender in moderating the influence of social responsibility and revenge. Government institutions need to consider gender differences when designing their citizen reporting applications and their associated marketing campaigns.**

Keywords*—*Self-determination theory; gender role theory; social role theory; motivation; amotivation; gender diversity; social responsibility; citizens reporting application

I. Introduction

Transparent public information, participatory decision-making procedures, and innovative platform-based forms of collaborative activities are examples of government efforts to strengthen citizen-government connections [1]. Crowdsourcing applications are one form of open government initiative that aims to accomplish a task by soliciting of external community contributions via an online platform [2]. Crowdsourcing involves two types of actors: individuals or organizations seeking assistance in carrying out tasks and solving problems, and crowd members who offer their services as a contribution [3]. Citizen reporting applications are one type of crowdsourcing application that aims to incorporate citizen participation in reporting incidents to develop public services. Originally, it was mainly used to report infrastructure issues in specific regions through the utilization of geolocation technology [4]. Citizen reporting applications are now being employed for several purposes, such as reporting environmental disasters, controlling pandemic outbreaks [5], and reporting commercial or security incidents.

Many publications on citizen reporting focus on either reviewing the structural concept of citizen reporting applications, such as the study of Linders [6], or concentrate on the ultimate design of citizen reporting applications, such as the study of Lönn, et al. [7]. Few studies were found investigating motivational factors behind citizens' willingness to voluntarily engage in citizen reporting activities in a specific context. Wijnhoven, et al. [8] investigated various motivational factors behind users' willingness to engage in open government, which includes citizen reporting applications as one variant of the open government initiative. Although the study is useful in giving general insight about factors motivating citizens to participate, it only studies citizens' hypothetical interest in participating as the majority of the survey respondents did not actually use this kind of application before. Therefore, further studies are needed to confirm their results using a representative sample. Abu-Tayeh, et al. [4] studied the impacts of two drivers, i.e., self-concern and other-orientation, on citizens' actual participation in citizen reporting applications in the context of smart cities. Although the study found these factors to be significant, the validity of their findings is limited to the context of reporting issues and damages related to the infrastructure in Zurich, which cannot be generalized to other contexts. Alhammad, et al. [9] studies the motivational factors behind citizens' engagement in citizen reporting applications to report commercial incidents. They found that self-concern, revenge, and output quality play significant roles in users' engagement. However, their study was limited to the context of only reporting commercial incidents. Motivational factors behind citizens' willingness to engage in citizens' reporting applications related to different contexts, such as reporting commercial, health, or security issues and violations, remain unstudied. In addition, there is a scarcity of empirical research on studying gender differences when studying what motivates application users to dedicate time and resources to assisting

governments through their participation in citizen reporting applications.

Gender has a significant impact on how people organize their identities and how they interact with different stimuli surrounding them [10]. When it comes to personality, men and women are very different [11]. Common standards for men encourage rivalry, independence, status striving, and toughness, but women are expected to be caring, communal, and modest, rather than controlling, aggressive, dominant, or stubborn [12]. In the context of individuals' engagement in citizen reporting applications, Abu-Tayeh, et al. [4] found that gender is related to the number of reports. In particular, men were found to contribute substantially more frequently to the citizen reporting applications compared to women. This implies that the incentive to participate in citizen reporting is not distributed equally among genders. However, no previous studies investigated the role of gender in moderating the relationships between antecedents of motivations and individuals' engagement in citizen reporting applications. Gender is potentially important to our understanding of user acceptance of citizen reporting since it could play an important role in determining how users make their decisions about adopting and using such applications.

Hence, in order to bridge the gaps in the contemporary literature on citizen reporting applications stated above, the present study aims to investigate gender differences in the overlooked context of studying the impact of motivational factors behind the use of citizen reporting applications. In light of this, this research will employ the self-determination theory to elicit the main reasons that enhance citizens' participation in citizen reporting applications. The theory will be expanded to consider factors impacting users' intrinsic and extrinsic motivations to participate, as well as gender as a moderator factor. As such, this paper contributes to enhancing our understanding of the motivational factors behind citizens' participation in such applications, which are increasingly being used as part of many open government initiatives.

The reminders of this paper are organized as follows: the following section continues a review of relevant literature about citizen sourcing and reporting applications with reviewing the motivations behind citizen reporting behaviour. Next, the model and hypothesis development are presented, followed by the research methodology used in this research. We then continue with presenting the analysis and results. The final section discusses the results and concludes the study.

II. Literature Review

A. Citizens Sourcing and Reporting Applications

Three components of crowdsourcing, as identified by [13], are interacting to bring about the rise of a "collective intelligence system": the organization, the crowd, and the platform, which are represented in the context of this study by the government, citizens, and technology, respectively [14]. Crowdsourcing is sometimes called as 'citizen-sourcing' or 'citizen-reporting' in the context of open governments, as considered in this study [15]. Citizen reporting applications allow citizens to share information directly with the concerned governmental agencies via web-based or mobile platforms [4]. By offering this kind of applications, citizens can play an important role in providing situational awareness by sharing information with the government [6]. Governments can then employ the information gathered through these applications to enhance the quality of public services. Therefore, the goal of governments usage of citizen sourcing is to co-produce knowledge with citizens while the government remains fully responsible for carrying out its activities.

Evidence shows that government agencies are capable of utilizing citizen reporting applications to improve public services at a lower cost, carry out policy innovations, and boost public engagement [16]. Therefore, several governments have developed citizen reporting applications for different purposes. For example, in Switzerland, the "FixMyStreet" application allows citizens residing in Zurich to report issues regarding the infrastructure of the city to local authorities [4]. The Portuguese government has also developed a mobile application, "Citzens@City", that allows citizens to report city-related problems, such as potholes, poor road lighting, or the lack of accessibility of wheelchairs for people with disabilities, to the local authority. Citizens can easily download the application and use it to report the problem, which is categorized by a subject, description, location, and optional picture of the spot [17]. Additionally, the Saudi government has also created a set of national citizen reporting applications such as "Kulluna Amn" (which translates to "We are All Safe") to enable citizens to report security incidents, and "Balagh" (which translates to "report app"), to enables customers to report any commercial violations.

In order for these applications to be effective, citizens must be encouraged to participate in and engage with them. These apps will not provide the intended benefits unless citizens participate. As a result, this article will discuss the motivators that drive user participation and engagement in citizen reporting systems.

B. Motivations and Citizens Engagement in Citizen Reporting Applications

The motivation for human behaviour is one of the most important current subjects in psychology. Motivation stems from the dynamic relationship that occurs between an individual and their environment, which causes certain behaviours to occur [18]. Motivation is more than just the basic concept of motive, which remains relatively steady throughout an individual's lifespan. Motivation is primarily about the interaction between an individual's personal motives and a setting that may spark positive behaviour [19, 20].

Even though motivation is present in all activities, the effect and orientation of these drives vary. Motivation is grouped into three types according to the Self-Determination Theory (SDT) [21]: extrinsic motivations, intrinsic motivations, and amotivation. From an extrinsic motivation perspective, individuals' behaviour is driven through the use of external sources such as attaining better/more valuable outcomes or gaining reward [21]. On the other side, from an intrinsic motivation perspective, individual behaviour is self-driven, and the motivation comes from internal drives within the individuals themselves. Individuals' core values and interests are examples of intrinsic motivations, rather than the

value of the activity itself. Enjoyment and happiness, though important, are not the primary motivations for choosing to perform certain behaviour [22]. According to Waterman [23], only positive subjective states should be considered part of intrinsic motivation, whereas activities that are more related to hedonic enjoyment should be labelled as "hedonic motivation". Waterman [23], therefore, emphasised the importance that the term "intrinsic motivation" be redefined to relate specifically to activities that involve both eudaimonia and hedonic motivation. Lastly, from the amotivation perspective, amotivated people do not appear to have particular aims and goals, and they do not appear to approach their goals in a systematic manner [24]. They are not motivated either internally or externally [25].

In the context of this study, it is essential for governments to know what motivates citizens to engage and participate in citizen reporting applications especially as this kind of engagement is completely voluntary behaviour. Citizens are not obligated to participate and report observed incidents. In fact, citizens using this kind of application work as voluntary sensors to report issues and share knowledge with governments to help them perform their jobs and provide better services. Lin [26] examined the motivations behind individuals' participation in voluntary knowledge sharing within an organization. The study examined extrinsic motivations (i.e., expected organizational rewards and reciprocal benefits) and intrinsic motivations (i.e., knowledge self-efficacy, and enjoyment in helping others) as key factors influencing individuals' intentions to share knowledge. The results show that three motivational factors (i.e., reciprocal benefits, knowledge self-efficacy, and enjoyment in helping others) are significantly associated with an individual's intention to share knowledge. However, expected organizational rewards do not significantly influence individuals' behavioural intentions toward knowledge-sharing. Thapa, et al. [27] found that citizens with relevant expertise are self-motivated and have the courage and sense of responsibility to collaborate and engage in their field of expertise. They also found that rewards, though working as incentives, are not essential to ensure citizens' engagement in reporting applications. Another study conducted by Schmidthuber, et al. [1] found that the level of citizen motivation to engage in citizen reporting applications varies based on the types of users, i.e., proactive, interactive, and passive types of users. The study also found that citizens who always report offline tend to be more likely to report incidents online using citizen reporting applications. This indicates that regardless of the channel of reporting, citizens' motivations and personalities play a significant role in their willingness to report to the government. Additionally, Abu-Tayeh, et al. [4] studied the motivational factors behind citizens' engagement to use the "Zueri wie neu" application (which translates to "FixMyStreet") in the city of Zurich, Switzerland. The study indicates that both self-concern and other-orientation motivate citizens to voluntarily support the government by reporting incidents related to infrastructure using this platform, though self-concern is a slightly stronger driver. According to Alam, et al. [2], intrinsic motivations that are related to personal interest, fun, and community service are the main drivers for individuals' participation in voluntary crowdsourcing applications and they only impact users short-term engagement. On the other hand, individuals' extrinsic motivations, such as recognition and rewards, are what actually drive long-term engagement. However, by reviewing other relevant studies in the field [8, 9, 28], one can indicate that both intrinsic and extrinsic motivational categories are to varying degrees, responsible for human behaviour.

In this study, amotivation, intrinsic and extrinsic motivations, and their antecedents will be considered as the main predictors of citizen participation in the citizen reporting application. Individual differences, particularly gender differences, will also be taken into account as they are theorized to moderate different relationships within models studying information system adoption in general [29].

III. Hypotheses and Model Development

The self-determination theory (SDT) is feasible in the context of this investigation. It will be used to investigate the motivating elements that drive user adoption and engagement in citizen reporting applications (see Fig. 1). The SDT theory can be expanded to include aspects that may elicit both intrinsic and extrinsic motivations, influencing an individual's behavioural intention to use such apps. Extrinsic motivation is driven by the user's perceptions of usefulness and benefits that will be gained from using an application [29, 30]. On the other hand, intrinsic motivation is driven by the user's perceptions of satisfaction and pleasure when performing a behaviour [31, 32]. This sense of pleasure motivates citizens to help and support the government by voluntarily reporting incidents in online citizen reporting applications [33]. Interestingly, Van der Heijden [34] found that although both types of motivation are significant predictors, antecedents of intrinsic motivation are stronger determinants of an individual's behaviour and intention to perform certain tasks compared to antecedents of extrinsic motivation. Psychological research found that a higher level of intrinsic motivation leads to users' inclination to dedicate more time to perform the task due to the self-satisfaction feeling they experience while performing the behaviour [21]. However, both types of motivations have been verified in the literature to be a strong incentive for users to participate in crowdsourcing projects and open government initiatives [8, 9, 27, 35]. Hence, this leads to the following hypotheses:

H1: Intrinsic motivation will positively impact users' behavioural intention to use citizen reporting applications.

H2: Extrinsic motivation will positively impact users' behavioural intention to use citizen reporting applications.

Amotivation must also be included in order to completely comprehend human behaviour [21]. Amotivation, which refers to the lack of motivation to perform certain activities, is a good predictor of human behaviour. According to Deci and Ryan [36], individuals are experiencing the amotivation state if they believe there is a lack of consistency between their behaviour and its outcomes, or when they feel incompetent and out of control [36]. Legault, et al. [37] further illustrate that amotivation is a result of an individual's feeling of lack of ability, the difficulty of the work, task characteristics, and the value derived from executing the task. Amotivated people

may feel fragmented or detached from their actions and, as a result, expend little effort or energy in carrying out assigned tasks. Such people will consider their behaviour as being beyond their control. Therefore, as individuals that are unmotivated simply do not demonstrate a willingness to participate in an activity, we hypothesis that:

H3: Amotivation will negatively impact users' behavioural intentions to use citizen reporting applications.

A. Antecedents of Intrinsic Motivation in Citizens Reporting Applications

Engagement in citizen reporting applications is in part driven by antecedents of intrinsic motivation, as the majority of citizen reporting applications are voluntary and users are typically not rewarded for their participation [38]. Based on the reviewed literature, the main antecedents of intrinsic motivation that are considered in this study are settling an issue related to self-concern or satisfying the feeling of revenge.

According to [22], revenge initiate a feeling of pleasure resulting from the relief of a painful tension. Although revenge is considered inappropriate and discouraged in modern society [39], it remains an emotionally and politically powerful force in society [40]. Revenge forms an intrinsic motive that drive individuals to take actions to relief the dissatisfaction feeling [41]. [42] found that customer retaliation entails a customer causing harm to a company in exchange for perceived losses committed by the company. Additionally, [43] has found that a vengeance motive (a strong desire to cause damage) increases the chance of "tangible" revenge behaviour. The emphasis on a desire for vengeance is vital since users are not always able to translate their desire into acts [44]. Citizen's sourcing applications, which allow citizens to report incidents, empower citizens and open an opportunity for citizens to report incidents that harm them directly. Hence, it offers a way for satisfying the revenge feeling. Therefore, the desire for revenge will motivate citizens to participate in citizens sourcing applications. In light of this, we hypothesis that:

H4: Revenge will positively impact users' intrinsic motivation towards using citizen reporting applications.

According to [4], self-concern is a strong intrinsic motivator for citizen reporting engagement. Self-concern is defined as the inclination to form one's behaviour with respect to the craving to secure and improve one's self-interest. Citizens may engage in citizen reporting applications in the hope of solving their own issues and get the most personal benefits from the platform [8]. An example of this is when the users are reporting an incident that impacts them personally. On the other hand, when self-concern is the main motive for using the platform, self-concern can be raised by setting higher aspirations [45]. In addition, several other studies [1, 9, 46, 47] found that self-concern is a significant predictor of citizens' participation in crowdsourcing projects, which include citizen reporting applications. Drawing on these studies, we hypothesis the following:

H5: Self-concern will positively impact users' intrinsic motivation towards using citizen reporting applications.

B. Antecedents of Extrinsic Motivation in Citizens Reporting Applications

Extrinsic motivation is behaviour that is instigated by external benefits such as monetary rewards, promotions, and other tangible rewards. Citizens' participation in the citizen's sourcing application is influenced in part by extrinsic motivational factors such as having a sense of and appreciation for social responsibility, expecting rewards, or receiving better service quality as a result of reporting an incident. Literature shows that this kind of motivation is thought of as a significant stimulus for adopting and using information systems in general [29, 48-50].

In the context of citizen reporting applications, [4] found that other-orientation (aka social responsibility) is a significant extrinsic motivational driver of citizen reporting engagement. Other-orientation is defined as the attempt to help others by reporting their issues to the government with the aim of solving their problems. In this case, altruistic motivation is the driving force behind citizens' voluntary engagement to use this kind of collaboration platform [51]. [46] study revealed that the main reason for individuals' participation in open-source platforms is the desire to help others. According to [1], individuals who are altruistic and interested in helping their community engage in more citizen sourcing activities more frequently compared to others. Caring and having love for the community initiate an altruistic motivation to engage in crowdsourcing projects [52]. However, feeling obligated to participate in order to be a good community member can occur [53]. In many cultural settings, especially those characterised as being collectivistic, social standing is determined by what one gives away rather than what one owns [54]. Hence, intensifying the obligation feeling can raise citizens' extrinsic motivation to participate as well as their direct willingness to engage in citizens reporting applications. Therefore, we hypothesis the following:

H6: Social responsibility will positively impact users' extrinsic motivation towards using citizen reporting applications.

H7: Social responsibility will positively impact users' behavioural intentions towards using the citizen reporting application.

The second antecedent of extrinsic motivation to be considered in this research is output quality. The second version of technology acceptance model (TAM2) posits that output quality is a determinant of users' perceptions of a system's usefulness [30]. This construct refers to the performance related consequences of doing the task [55]. Venkatesh and Davis [30] suggest that output quality judgments take the form of a profitability test, "in which, given a choice set containing multiple relevant systems, one would be inclined to choose a system that delivers the highest output quality" (pp.192). Citizens are more likely to participate in government citizen reporting applications if the system's expected output quality is high. In other studies by Winkler, et al. [56] and , Alhammad, et al. [9] they find that output quality takes on greater importance than any other variables related to extrinsic motivation. In light of the aforementioned, we derive the following hypothesis.

H8: Output quality will positively impact users' extrinsic motivation towards using citizen reporting applications.

Crowdsourcing research also discovered that reward and prizes were especially important in determining citizens' behaviour to participate in crowdsourcing, including citizen reporting applications [35, 57]. Monetary rewards can increase participants' willingness to report to the government as many participants treat crowdsourcing applications as a kind of employment [35]. According to Garcia Martinez and Walton [58], increasing the monetary compensation can attract more participants and therefore increase the success of the crowdsourcing project. In non-government crowdsourcing projects, such as Amazon Mechanical Turk, studies show that more than half of the crowd dedicates about eight hours to work on the platform as an additional source of income [57]. Another study conducted by Assegaff et al. (2016) found that if employees believe they can obtain organizational rewards for sharing their knowledge, they will be more willing to use virtual communities of practice (VCoPs) and to share their knowledge. In the context of the public sector, the U.S. Office of Management and Budget in 2009 encouraged the use of prizes and rewards to encourage citizen participation in open government initiatives [59]. This is because offering rewards and prizes initiates incentives and motives for citizens to participate and increases the chance of project success. On the other hand, while offering excessive tangible rewards increases participants' extrinsic motivations, it may weaken their intrinsic motivation [18]. This is known as the "over-justification" effect phenomenon. To simplify, it explains that if the behaviour is already intrinsically rewarding, offering extrinsic motivation will eliminate the enjoyment gained from performing it. Rewards as an extrinsic motivation should be offered when an individual needs to perform an unpleasant task. Therefore, government sectors should evaluate the right rewards to be offered for individuals participating in crowdfunding projects. As most of the offered citizen reporting applications do not incorporate enjoyment factors into their design, it would be expected that rewards would play a positive role in citizens' motivation and willingness to participate in this kind of project. Hence, in this study, we hypothesis the following:

H9: Rewards will positively impact users' extrinsic motivation towards using citizen reporting applications.

C. The Moderating Role of Gender

In the context of the proposed model, gender role theory [60] and social role theory [61] are employed to establish gender's differences as a moderator in the proposed model. According to these theories, gender differences are likely to moderate the impact of social responsibility and revenge. Literature demonstrates that gender differences exist when it comes to caring for other people and the environment, with women being more caring, concerned about environmental issues, and having more environmentally friendly ideas and beliefs [62]. Females not only care about environmental degradation and climate change, but they also maintain the awareness and abilities necessary to discover local solutions [63]. The authors in [64] stated that females, in general, are interested in acquiring and cultivating social behaviors such as helping and caring for others. Revenge, on the other hand, is more associated with males than females, as females mostly assume a submissive attitude and avoid aggression and retaliation, whereas men are encouraged to demonstrate violent behaviours and seek revenge [65, 66]. [67] found that men had more vengeance dreams than women, whereas women thought vengeance was pointless. Hence, this study will hypothesis that:

H10: Gender moderates the relationship between social responsibility and users' behavioural intentions towards using citizen reporting applications.

H11: Gender moderates the relationship between revenge and users' intrinsic motivation towards using citizen reporting

These hypotheses are presented comprehensively in a proposed model shown in Fig. 1.

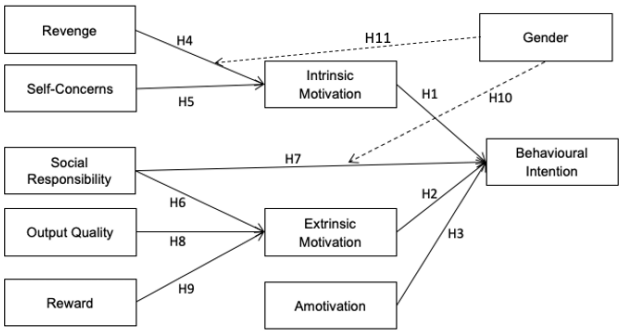

Fig. 1. Proposed Model.

IV. Research Methodology

A. Sample and Data Collection

The purpose of this empirical study is to investigate the direct effect of motivational factors on citizen participation in citizen reporting applications. It also intends to investigate the moderating effect of gender on some of the proposed relationships. To test the proposed hypotheses, this study applies the questionnaire survey method, which is a widely accepted method for model testing in the field of information systems [68]. A closed-ended structured questionnaire was designed using the SmartSurvey website. Trap questions were used to identify unengaged responses. The questionnaire was pilot-tested in order to assess its correctness, meaningfulness, and clarity. Specifically, 50 respondents participated in the pilot study before administering the survey to the targeted audience to certify the face validity of the applied measurement items. A slight refinement was made based on their feedback. After ensuring the quality of the questionnaire, the survey link was distributed to 1000 individuals living in Saudi Arabia through online channels such as emails, WhatsApp, and social media accounts. Only the respondents who had previously used one of the available citizen reporting applications were allowed to participate. After removing duplicate responses and unengaged responses, a total of 499 valid responses were received for analysis. Table I shows the demographic information of the respondents.

TABLE I. RESPONDENTS DEMOGRAPHIC INFORMATION (N = 499)

Variable	Value	Frequency	Percentage
Age	Under 18	18	3.6 %
	18-24	72	14.43 %
	25-34	134	26.85 %
	35-54	237	47.49 %
	Over 55	38	7.62 %
Gender	Male	124	24.85 %
	Female	375	75.15 %
Educational level	High school	96	19.24 %
	Bachelor degree	328	65.73 %
	Master degree	48	9.62 %
	PhD.	11	2.2 %
	Other	16	3.2 %

B. Measurements

All of the items used in this study were derived from previously validated items and changed to match the goal of this study (see Table II). Behavioural intention and intrinsic and extrinsic motivation measurement items were adapted from [50] and [29]. Amotivation was measured using items adapted from [69]. Self-concern was measured using items adapted from [4] while social responsibility was measured using items adapted from both [4] and [1]. Items measuring rewards were adapted from [8]. Output quality measurement items were adapted from [55] and [29]. For revenge, measurement items, which were originally developed by [70] and adapted by [44], were used after alteration to suit the context of this study. All of measurement items were measured and operationalised using a five-point Likert scale ranging from strongly disagree (1) to strongly agree (5). The questionnaire was in English and translated into Arabic to ensure respondents understood the questions. Three experts used back translation to validate the translation's accuracy.

TABLE II. MEASUREMENT ITEMS

VBs	Items	Source
Behavioural Intention	BI1: I am considering using this app to report incidents. BI2: I would seriously contemplate using this app. BI3: It is likely that I am going to use this app. BI4: I am likely to make future reports using this app.	Adapted from [50] and [29]
Extrinsic motivation	EM1: I find using this application useful. EM2: Using this application enables me to report incidents more efficiently. EM3: I can forward my concerns to local government directly.	
Intrinsic motivation	IM1: I participate in this application because I think that this participation is interesting. IM2: I participate in this application because this participation is fun IM3: I participate in this application because I feel good when doing this reporting	
Amotivation	AM1: There may be good reasons to do this activity, but personally I don't see any AM2: I do this activity but I am not sure if it is worth it	Adapted from [69].
output quality	OQ1: The use of this application will improve the quality of provided services. OQ2: The use of this application will contribute to the development of offered services. OQ3: Using this application will enhance the overall quality and efficiency of the provided services.	Adapted from [55]
Reward	RW1: My willingness to participate in this application would increase if there were monetary rewards RW2: I will really like to participate in this application if I would receive monetary rewards in return for my knowledge sharing.	Adapted from [8]
Revenge	RV1: My feeling of anger towards violators pushes me to use the application and report them RV2: I use this app to publicize the practices of violators and punish them. RV3: I submit a complaint via the application to avenge violators	Adapted from [70]
Self-concern	SC1: I took part in "Balag" because I could report problems that concerned me personally. SC2: I took part in "Balag" because I could report problems that prevented me from fulfilling my needs SC5: I participate in this application because I believe that this kind of reporting is important for me	Adapted from [4]
Social responsibilities	SR1: I took part in Balag application because it gives me the opportunity to protect others from fraud. SR2: I took part in this application because I could help the community by doing so. SR3: I want to contribute to the development of the services provided in my city by using this application. SR4: I would feel bad about myself if I don't share information about commercial violations with the relevant authorities. SR5: I participate in this application because I feel that this is something that I have to do it for the society.	Adapted from both [4] and [1]

V. DATA ANALYSIS AND RESULTS

The study uses the partial least squares structure equation Modelling (PLS-SEM) method to analyse the collected data due to its ability to validate the measurement and test structural models at the same time. PLS is a comprehensive variance-based structural equation modelling for analysing skewed non-multinormal distribution, and its variance-based approach is more averse to overestimating relationships between constructs compared to the common SEM [71]. The PLS is also useful for analysing complex models with multiple constructs [72, 73]. Therefore, PLS was the ideal method to be used in this study due to the relative complexity of the proposed model. The analysis was done using the SmartPLS 4 for Mac OSX to examine the measurement and structural models.

A. Measurement Model

To validate the measurement model, the reliability and validity of the measurement model are evaluated. Table II shows that all of the measurement items show a good level of factor loading ranging from 0.560 to 0.963 which exceeds the minimum acceptable value of 0.5 [74]. Two measurement items, one from amotivation and one from reward, had to be removed because their factor loading values were less than 0.5. All of the items were loaded to their relevant construct than on any other constructs with the t-values showing significant results ($p < 0.001$). Therefore, these items were maintained for the analysis. In addition, to assess the

reliability of the maintained measurement items, Cronbach's alpha (α) and composite reliability (CR) were applied. The Cronbach's alpha (α) values for most of the constructs were above 0.7 which indicates a good internal consistency level of each construct [75]. Amotivation and revenge have slightly lower reliability level with Cronbach's alpha (α) values of 0.663 and 0.617 respectively. However, these Cronbach's alpha (α) values still exceed the minimum threshold value of 0.6 [76] and demonstrates an acceptable level. Composite reliability (CR) values of all of the constructs are above the recommended value of 0.7 [77]. Hence, all the constructs demonstrate acceptable internal consistency.

TABLE III. THE MEASUREMENT MODEL STATISTICS

Variable	Items	Loading	T-value	*α*	*CR*	*AVE*
Behavioural Intention	BI1	0.841	47.041	0.867	0.909	0.715
	BI2	0.854	43.247			
	BI3	0.839	39.678			
	BI4	0.850	55.164			
Amotivation	AM1	0.917	18.233	0.663	0.773	0.636
	AM2	0.657	5.702			
Extrinsic motivation	EM1	0.832	52.969	0.750	0.856	0.665
	EM2	0.807	31.543			
	EM3	0.809	30.046			
Intrinsic motivation	IM1	0.769	22.409	0.721	0.834	0.626
	IM2	0.786	25.439			
	IM3	0.818	45.401			
output quality	OQ1	0.871	64.121	0.824	0.895	0.739
	OQ2	0.840	32.563			
	OQ3	0.867	53.018			
Reward	RW1	0.963	3.054	0.811	0.702	0.570
	RW2	0.560	1.274			
Revenge	RV1	0.786	27.894	0.617	0.797	0.567
	RV2	0.765	27.240			
	RV3	0.707	20.702			
Self-concern	SC1	0.749	24.626	0.721	0.824	0.541
	SC2	0.640	13.936			
	SC3	0.759	29.309			
	SC4	0.786	29.174			
Social responsibilities	SR1	0.825	34.577	0.861	0.900	0.643
	SR2	0.804	38.671			
	SR3	0.786	28.045			
	SR4.	0.762	32.847			
	SR5	0.830	33.293			

To assess the convergent validity of the constructs, the average variance extracted (AVE) was calculated. Table III shows that all of the constructs have an AVE above the recommended value of 0.5 [78] showing satisfactory convergent validity. On the other hand, discriminant validity was also assessed using the criterion of Fornell and Larcker [79] where the square root of AVE is calculated. Table IV shows that the square root of AVE for each construct is greater than its correlation with the other constructs, indicating that the measurement items used meet the discriminate validity conditions. Additionally, the Heterotrait-Monotrait ratio of correlations (HTMT), which is a new method for assessing the discriminant validity of the measurement model, was also assessed. Table V indicates that the HTMT values for each of the two distinct constructs in the proposed model are less than one. Thus, based on the HTMT criterion [80], discriminant validity is achieved, and the structural model can be evaluated.

TABLE IV. DISCRIMINANT VALIDITY: SQUARE ROOT OF AVE (FORNELL-LARCKER CRITERION)

Variables	AM	BI	EM	IM	OQ	RV	RW	SC	SR
Amotivation	**0.798**								
Behavioural Intention	-0.219	**0.846**							
Extrinsic Motivation	-0.248	0.706	**0.816**						
Intrinsic Motivation	0.008	0.482	0.425	**0.791**					
Output Quality	-0.220	0.714	0.750	0.435	**0.860**				
Revenge	-0.018	0.512	0.505	0.559	0.489	**0.753**			
Reward	0.110	0.047	0.098	0.202	0.104	0.198	**0.755**		
Self-concern	-0.102	0.601	0.620	0.616	0.564	0.641	0.199	**0.736**	
Social Responsibilities	-0.208	0.785	0.767	0.490	0.784	0.532	0.056	0.629	**0.802**

TABLE V. DISCRIMINANT VALIDITY: HETEROTRAIT-MONOTRAIT RATIO (HTMT)

	AM	BI	EM	IM	OQ	RV	RW	SC	SR
Amotivation									
Behavioural Intention	0.324								
Extrinsic Motivation	0.392	0.869							
Intrinsic Motivation	0.235	0.559	0.524						
Output Quality	0.339	0.843	0.843	0.494					
Revenge	0.253	0.692	0.736	0.795	0.678				
Reward	0.403	0.050	0.068	0.315	0.085	0.303			
Self-concern	0.219	0.746	0.835	0.792	0.728	0.867	0.268		
Social Responsibilities	0.320	0.808	0.856	0.542	0.936	0.725	0.081	0.784	

B. Structural Model Assessment

The second step is to analyse the structural model to test the proposed hypotheses and the theoretically established path. The bootstrapping procedure with 5000 samples set on PLS was used to obtain the path coefficients. The significance level was set to 5% to determine the significance levels for each of the path coefficients. The squared multiple correlation (R^2)

and significance of paths were used to assess the predictive power of the model and test the proposed hypotheses. The R^2 of extrinsic motivation is 0.652 which implies that social responsibilities, output quality, and rewards are able to explain the variance in extrinsic motivation by 65.2%. Likewise, revenge and self-concern are able to explain 42% of the variance of intrinsic motivation (R^2 = 0.42). The multi-mediation model explains 65.9% of behavioural intention variances. The results indicate that the proposed model has good predictive power, as all of the R^2 values are greater than the specified threshold value of 0.1 (Falk & Miller, 1992). In addition, the model fit was evaluated using SRMR, which, according to Henseler, et al. [81], can be used to avoid model misspecification. The SRMR value was 0.093, which is less than the required threshold value of 0.1, suggesting satisfactory model fit [71].

After assessing the proposed model's goodness of fit, hypotheses were evaluated to determine the significance of the identified relationships. As hypothesised in H1, H2, H3, and H7, intrinsic motivation (β = 0.122, t = 3.806, p < 0.001), extrinsic motivation (β = 0.213, t = 3.213, p < 0.005), amotivation (β = -0.045, t = 1.714, p < 0.05), and social responsibility (β = 0.812, t = 6.360, p < 0.001) exhibit significant impact on behavioural intention. As expected, intrinsic motivation, extrinsic motivation, and social responsibility all have a positive impact on behavioural intention, with social reasonability having the highest impact on variance, while amotivation has a negative impact. Therefore, H1, H2, H3, and H7 are supported. In addition, H4 and H5 evaluate whether revenge and self-concern have a significant positive impact on intrinsic motivation. The results indict that revenge (β = 0.278, t = 5.971, p < 0.001) and self-concern (β = 0.435, t = 9.369, p < 0.001) positively influence intrinsic motivation, thus validating H4 and H5. Additionally, extrinsic motivation is found to be positively influenced by social responsibilities (β = 0.494, t = 9.984, p < 0.001) and output quality (β = 0.354, t = 7.058, p < 0.001) with the social responsibility having the highest impact, supporting H6 and H8. Rewording, on the other hand, was found to have no effect on extrinsic motivation (β = 0.031, t = 0.790, p > 0.05), rejecting H9.

For the moderate relationships, the results demonstrate that gender moderates the relationship between social responsibility and behavioural intention. At (β = -0.159, t = 2.132, p < 0.01), this relationship is statistically significant. Thus, H10 is supported. Furthermore, it moderates the relationship between revenge and intrinsic motivation, which is statistically significant at (β = 0.303, t = 2.918, p < 0.005); thereby supporting H11. Fig. 2 depicts the results of the structural model, and Table VI shows the hypotheses test results.

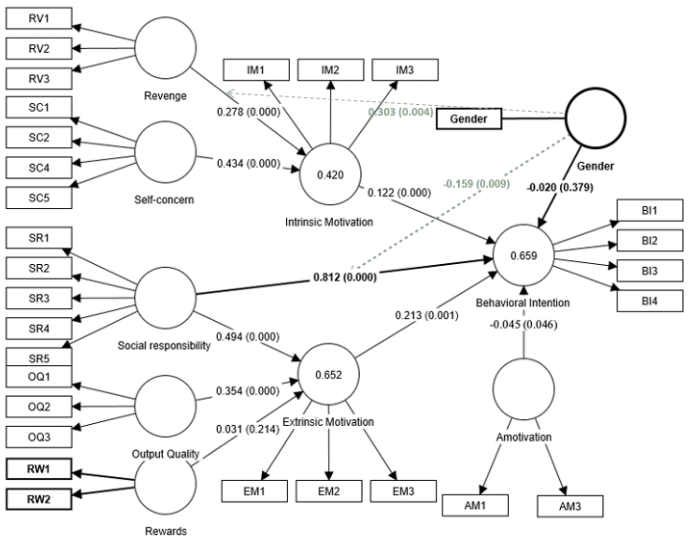

Fig. 2. The Results of the Empirical Study.

TABLE VI. OVERVIEW OF THE HYPOTHESES TEST RESULTS

H	Hypotheses	β	SD	T-value	P-Values	5.00%	95.00%	Supported / not supported
H1	Intrinsic Motivation → Behavioural Intention	0.122	0.034	3.806	0.000	0.074	0.189	supported
H2	Extrinsic Motivation → Behavioural Intention	0.213	0.066	3.213	0.001	0.106	0.324	supported
H3	Amotivation → Behavioural Intention	-0.045	0.028	1.714	0.046	-0.096	-0.006	supported
H4	Revenge → Intrinsic Motivation	0.278	0.047	5.971	0.000	0.204	0.357	supported
H5	Self-concern → Intrinsic Motivation	0.435	0.046	9.369	0.000	0.359	0.513	supported
H6	Social Responsibilities → Extrinsic Motivation	0.494	0.049	9.984	0.000	0.41	0.574	supported
H7	Social Responsibilities → Behavioural Intention	0.812	0.124	6.360	0.000	0.582	0.992	supported
H8	Output Quality → Extrinsic Motivation	0.354	0.050	7.058	0.000	0.273	0.439	supported
H9	Reward →Extrinsic Motivation	0.031	0.039	0.790	0.214	-0.051	0.079	Rejected
H10	Social Responsibilities *Gender → Behavioural Intention	-0.159	0.102	2.132	0.009	-0.387	-0.05	supported
H11	Revenge*Gender → Intrinsic Motivation	0.303	0.104	2.918	0.004	0.088	0.493	supported

VI. Discussion and Implications

As mentioned earlier, the aim of this study is to examine the motivational factors behind the usage of citizen reporting applications and investigate the role of gender differences in moderating the proposed relationships. The statistical analysis indicates that both intrinsic and extrinsic motivations positively influence individuals' behavioural intention, with extrinsic motivation being the highest predictor. On the other hand, amotivation, as expected, was found to negatively influence individuals' behavioural intentions. Surprisingly, these findings support the current and efficacy of the three types of motivations identified in self-determination theory [21]. Individuals experiencing a low amount of self-determination (amotivation) are less likely to engage in the citizen reporting applications, whereas individuals having a high amount of self-determination (intrinsic or extrinsic motivation) are more likely to participate. Several awareness efforts should be launched by government organizations to raise citizens' understanding of the benefits of their collaboration and participation in the use of citizen reporting applications. Hence, enhancing their self-determination level.

Self-concern and revenge are found to significantly influence individuals' intrinsic motivation, with self-concern being more influential. The significant impact of self-concern is consistent with previous research findings such as Abu-Tayeh, et al. [4], Schmidthuber, et al. [1], Alhammad, et al. [9], Wu, et al. [46], Oreg and Nov [47]. It stands to reason that citizens will report concerns that directly affect them in order to solve their own problems and meet their own demands. Individuals that are preoccupied with self-concern are proven to be more persistent contributors. Similarly, when an individual feels vengeance, it increases his/her self-determination level to impose harm on the offender. By offering citizen reporting applications to report incidences in a variety of fields, the government provides a means for individuals to express their rage without causing physical harm. Interestingly, the results show that revenge boosts men's willingness to harm the offender as compared to women, who are less prone to revenge. This corresponds to the personal attributes of men and women highlighted in the gender role theory [60] and the social role theory [61]. It also supports Mullins, et al. [65] illustration that females are more submissive and tend to avoid aggression and reprisal, whereas men, in several cultures, are raised to engage in violent behavior and seek vengeance.

Extrinsic motivation was found to be significantly impacted by social responsibility. Social responsibility is not only the strongest predictor of extrinsic motivation, but it is also the strongest direct predictor of an individual's behavioural intentions to use citizen reporting applications. This result is in line with the findings of Abu-Tayeh, et al. [4] and Schmidthuber, et al. [1]. Hence, the impact of social responsibility should not be underestimated. Altruistic people often go above and beyond in order to serve others and protect their community. The government should promote collectivism's social principles in order to create a loving community that looks out for one another. Creating such a community will boost the number of people who participate in citizen reporting applications. Furthermore, while women were found to have a higher sense of social responsibility than men, the impact of social responsibility principles in driving men to participate in citizen reporting applications was considerably sharper compared to women, where the impact is steady. This could be because men have a strong sense of duty and dedication when they believe in something [60]. Additionally, the majority of women, according to the analysis, have a greater level of social responsibility and actively participate in citizen reporting applications, making the analysis of this variable less sensitive to covariance analysis.

Output quality was also found to significantly impact extrinsic motivation. Many citizens participate in citizen reporting applications with the hope that they will receive better public services and an improved environment. Several technology acceptance theories, such as TAM2 [30] and UTAUT [48], emphasise the role of output quality in determining user acceptance of technology. The government should report on its progress as a result of citizen participation in citizen reporting applications. If citizens who participate cannot see the outcomes of their reporting, they may be reluctant to take part again.

Although many studies [35, 57] emphasised the importance of rewards in increasing individuals' willingness to perform certain tasks, rewards were not found to influence citizens' extrinsic motivation. The finding, though not expected, is not surprising, as some studies (e.g. Deci, et al. [18]) found that reward might produce negative consequences by weakening participants' intrinsic motivation. Hence, offering rewards will not intensify citizens' motivation to participate. Rewards should only be offered in citizen reporting applications if the reporting process is unpleasant and will not result in a benefit for the reporter or his/her community.

The current study makes numerous contributions to the recent literature. For example, the current study adds to the existing citizen reporting adoption and usage literature by investigating the motivational factors that influence citizens' engagement across multiple contexts, whereas the majority of previous studies have focused on citizen reporting adoption and usage in a single context. Furthermore, it investigates the impact of amotivation on users' behavioural intentions to use citizen reporting applications, which has not previously been investigated to the best of the author's knowledge. Similarly, the current study is the first to add considerably to the existing citizen reporting literature by studying the role of gender in moderating the influence of social responsibility and revenge.

VII. Conclusion

We conclude that extrinsic motivation, internal motivation, and amotivation all influence citizen involvement in citizen reporting applications. According to our findings, the motivating antecedents that strongly influence individuals' motivation to participate in citizen reporting applications are social responsibility, output quality, self-concern, and revenge. When compared to other drivers, social responsibility is the most powerful. The study also discovered that there are gender differences that influence the relationship between social responsibility and citizens' behavioural intentions, as well as

the relationship between revenge and intrinsic motivation. Future research should look into the function of other socioeconomic characteristics in moderating the observed motivational factors and their impact on individuals' behavioural intentions to participate in citizen reporting applications.

REFERENCES

[1] L. Schmidthuber, D. Hilgers, T. Gegenhuber, and S. Etzelstorfer, "The emergence of local open government: Determinants of citizen participation in online service reporting," Government Information Quarterly, vol. 34, no. 3, pp. 457-469, 2017/09/01/ 2017, doi: https://doi.org/10.1016/j.giq.2017.07.001.

[2] S. L. Alam, R. Sun, and J. Campbell, "Helping yourself or others? motivation dynamics for high-performing volunteers in GLAM crowdsourcing," Australasian Journal of Information Systems, vol. 24, pp. 1-25, 2020, doi: 10.3127/AJIS.V24I0.2599.

[3] M. Weiss, "Crowdsourcing Literature Reviews in New Domains," Technology Innovation Management Review, vol. 6, no. 2, pp. 5-14, 2016, doi: 10.22215/timreview963.

[4] G. Abu-Tayeh, O. Neumann, and M. Stuermer, "Exploring the Motives of Citizen Reporting Engagement: Self-Concern and Other-Orientation," Business & Information Systems Engineering, 2018, doi: 10.1007/s12599-018-0530-8.

[5] A. Desai et al., "Crowdsourcing a crisis response for COVID-19 in oncology," Nature Cancer, vol. 1, no. 5, pp. 473-476, 2020, doi: 10.1038/s43018-020-0065-z.

[6] D. Linders, "From e-government to we-government: Defining a typology for citizen coproduction in the age of social media," 2012, doi: 10.1016/j.giq.2012.06.003.

[7] C.-M. Lönn, E. Uppström, A. Nilsson, and R. Lönn, "DESIGNING AN M-GOVERNMENT SOLUTION: ENABLING COLLABORATION THROUGH CITIZEN SOURCING DESIGNING AN M-GOVERNMENT SOLUTION: ENABLING COLLABORATION THROUGH CITIZEN SOURCING," Association for Information Systems AIS Electronic Library (AISeL), 2016. [Online]. Available: http://aisel.aisnet.org/ecis2016_rp http://aisel.aisnet.org/ecis2016_rp/86.

[8] F. Wijnhoven, M. Ehrenhard, and J. Kuhn, "Open government objectives and participation motivations," Government Information Quarterly, vol. 32, no. 1, pp. 30-42, 2015, doi: 10.1016/J.GIQ.2014.10.002.

[9] M. M. Alhammad, L. Hajar, S. Alshathry, and M. Alqasabi, "Motivational Factors Impacting the Use of Citizen Reporting Applications in Saudi Arabia: The Case of Balagh Application," International Journal of Advanced Computer Science and Applications, vol. 12, no. 6, 2021.

[10] V. Venkatesh and M. G. Morris, "Why don't men ever stop to ask for directions? Gender, social influence, and their role in technology acceptance and usage behavior," Management Information Systems Quarterly, vol. 24, no. 1, pp. 115-139, 2000.

[11] M. E. Heilman, "Description and Prescription: How Gender Stereotypes Prevent Women's Ascent Up the Organizational Ladder," Journal of Social Issues, vol. 57, no. 4, pp. 657-674, 2001, doi: https://doi.org/10.1111/0022-4537.00234.

[12] C. A. Moss-Racusin, J. E. Phelan, and L. A. Rudman, "When men break the gender rules: status incongruity and backlash against modest men," Psychology of Men & Masculinity, vol. 11, no. 2, p. 140, 2010.

[13] Y. Zhao and Q. Zhu, "Evaluation on crowdsourcing research: Current status and future direction," Information Systems Frontiers, vol. 16, no. 3, pp. 417-434, 2014.

[14] K. Cupido and J. Ophoff, "A Model of Fundamental Components for an e-Government Crowdsourcing Platform," Electronic Journal of e-Government, vol. 12, no. 2, pp. 141-156, 2014.

[15] E. Estellés-Arolas and F. González-Ladrón-de-Guevara, "Towards an integrated crowdsourcing definition," Journal of Information Science, vol. 38, no. 2, pp. 189-200, 2012/04/01 2012, doi: 10.1177/0165551512437638.

[16] P. Dutil, "Crowdsourcing as a new instrument in the government's arsenal: Explorations and considerations," Canadian Public Administration, vol. 58, no. 3, pp. 363-383, 2015, doi: https://doi.org/10.1111/capa.12134.

[17] A. M. Ribeiro, R. P. Costa, L. Marcelino, and C. Silva, "Citizens@City Mobile Application for Urban Problem Reporting," in ENTERprise Information Systems, Berlin, Heidelberg, M. M. Cruz-Cunha, J. Varajão, P. Powell, and R. Martinho, Eds., 2011// 2011: Springer Berlin Heidelberg, pp. 141-150.

[18] E. L. Deci, R. Koestner, and R. M. Ryan, "Extrinsic Rewards and Intrinsic Motivation in Education: Reconsidered Once Again," Review of Educational Researchl Spring, vol. 71, no. 1, pp. 1-27, 2001, doi: 10.3102/00346543071001001.

[19] M. Fishbein and I. Ajzen, Belief, attitude, intention and behaviour: An introduction to theory and research. Reading, Mass: Addison-Wesley, 1975.

[20] I. Ajzen, "The theory of planned behavior," Organizational behavior and human decision processes, vol. 50, no. 2, pp. 179-211, 1991.

[21] E. L. Deci and R. M. Ryan, Intrinsic Motivation and Self-Determination in Human Behavior. Springer, 1985.

[22] E. Fromm, Man for himself; an inquiry into the psychology of ethics (Man for himself; an inquiry into the psychology of ethics.). Oxford, England: Rinehart, 1947, pp. xiv, 254-xiv, 254.

[23] A. S. Waterman, "When effort is enjoyed: Two studies of intrinsic motivation for personally salient activities," Motivation and Emotion, vol. 29, no. 3, pp. 165-188, 2005.

[24] V. Barkoukis, H. Tsorbatzoudis, G. Grouios, and G. Sideridis, "The assessment of intrinsic and extrinsic motivation and amotivation: Validity and reliability of the Greek version of the Academic Motivation Scale," Assessment in Education: Principles, Policy & Practice, vol. 15, no. 1, pp. 39-55, 2008, doi: 10.1080/09695940701876128.

[25] L. G. Pelletier, K. M. Tuson, M. S. Fortier, R. J. Vallerand, N. M. Briére, and M. R. Blais, "Toward a New Measure of Intrinsic Motivation, Extrinsic Motivation, and Amotivation in Sports: The Sport Motivation Scale (SMS)," Journal of Sport and Exercise Psychology, vol. 17, no. 1, pp. 35-53, 1995, doi: 10.1123/jsep.17.1.35.

[26] H. F. Lin, "Effects of extrinsic and intrinsic motivation on employee knowledge sharing intentions," Journal of Information Science, vol. 33, no. 2, pp. 135-149, 2007, doi: 10.1177/0165551506068174.

[27] B. E. P. Thapa, B. Niehaves, C. E. Seidel, and R. Plattfaut, "Citizen involvement in public sector innovation: Government and citizen perspectives," Information Polity, vol. 20, pp. 3-17, 2015, doi: 10.3233/IP-150351.

[28] G. V. Krogh, S. Haefliger, S. Spaeth, and M. W. Wallin, "Carrots and rainbows: motivation and social practice in open source software development," MIS Q., vol. 36, no. 2, pp. 649–676, 2012.

[29] V. Venkatesh, M. G. Morris, G. B. Davis, and F. D. Davis, "User acceptance of information technology: Toward a unified view," Management Information Systems Quarterly, pp. 425-478, 2003.

[30] V. Venkatesh and F. D. Davis, "A theoretical extension of the technology acceptance model: Four longitudinal field studies," Management science, vol. 46, no. 2, pp. 186-204, 2000.

[31] R. M. Ryan and E. L. Deci, "Intrinsic and extrinsic motivations: Classic definitions and new directions," Contemporary educational psychology, vol. 25, no. 1, pp. 54-67, 2000.

[32] V. Venkatesh, "Determinants of perceived ease of use: Integrating control, intrinsic motivation, and emotion into the technology acceptance model," Information systems research, vol. 11, no. 4, pp. 342-365, 2000.

[33] R. E. Schumacker and R. G. Lomax, A Beginner's Guide to Structural Equation Modeling: Third Edition. Taylor & Francis, 2012.

[34] H. Van der Heijden, "User acceptance of hedonic information systems," MIS quarterly, pp. 695-704, 2004.

[35] H. K. Liu, "Crowdsourcing Government: Lessons from Multiple Disciplines," Public Administration Review, vol. 77, no. 5, pp. 656-667, 2017, doi: 10.1111/puar.12808.

[36] E. L. Deci and R. M. Ryan, "Self-determination theory." Thousand Oaks, CA: Sage Publications Ltd, 2012, pp. 416-436.

[37] L. Legault, I. Green-Demers, and L. Pelletier, "Why do high school students lack motivation in the classroom? Toward an understanding of academic amotivation and the role of social support," Journal of educational psychology, vol. 98, no. 3, p. 567, 2006.

[38] H. Wang, J. E. Chung, N. Park, M. L. McLaughlin, and J. Fulk, "Understanding Online Community Participation," Communication Research, vol. 39, no. 6, pp. 781-801, 2012, doi: 10.1177/0093650211408593.

[39] L. H. Grobbink, J. J. Derksen, and H. J. van Marle, "Revenge: An analysis of its psychological underpinnings," International journal of offender therapy and comparative criminology, vol. 59, no. 8, pp. 892-907, 2015.

[40] P. Fischer, S. A. Haslam, and L. Smith, ""If you wrong us, shall we not revenge?" Social identity salience moderates support for retaliation in response to collective threat," Group Dynamics: Theory, Research, and Practice, vol. 14, no. 2, p. 143, 2010.

[41] N. N. Bechwati and M. Morrin, "Outraged consumers: Getting even at the expense of getting a good deal," Journal of Consumer Psychology, vol. 13, no. 4, pp. 440-453, 2003.

[42] Y. Grégoire, F. Ghadami, S. Laporte, S. Sénécal, and D. Larocque, "How can firms stop customer revenge? The effects of direct and indirect revenge on post-complaint responses," Journal of the Academy of Marketing Science, vol. 46, no. 6, pp. 1052-1071, 2018/11/01 2018, doi: 10.1007/s11747-018-0597-2.

[43] H. Zourrig, J.-C. Chebat, and R. Toffoli, "Consumer revenge behavior: A cross-cultural perspective," Journal of Business Research, vol. 62, no. 10, pp. 995-1001, 2009, doi: https://doi.org/10.1016/j.jbusres.2008.08.006.

[44] Y. Grégoire, D. Laufer, and T. M. Tripp, "A comprehensive model of customer direct and indirect revenge: Understanding the effects of perceived greed and customer power," Journal of the Academy of Marketing Science, vol. 38, no. 6, pp. 738-758, 2010, doi: 10.1007/s11747-009-0186-5.

[45] C. K. W. De Dreu and A. Nauta, "Self-interest and other-orientation in organizational behavior: Implications for job performance, prosocial behavior, and personal initiative," vol. 94, ed. De Dreu, Carsten K. W.: Department of Psychology, University of Amsterdam, Roetersstraat 15, Amsterdam, Netherlands, 1018 WB, c.k.w.dedreu@uva.nl: American Psychological Association, 2009, pp. 913-926.

[46] C.-G. Wu, J. H. Gerlach, and C. E. Young, "An empirical analysis of open source software developers' motivations and continuance intentions," Information & Management, vol. 44, no. 3, pp. 253-262, 2007, doi: https://doi.org/10.1016/j.im.2006.12.006.

[47] S. Oreg and O. Nov, "Exploring motivations for contributing to open source initiatives: The roles of contribution context and personal values," Computers in Human Behavior, vol. 24, no. 5, pp. 2055-2073, 2008, doi: https://doi.org/10.1016/j.chb.2007.09.007.

[48] V. Venkatesh, J. Thong, and X. Xu, "Consumer Acceptance and Use of Information Technology: Extending the Unified Theory of Acceptance and Use of Technology," Management Information Systems Quarterly, vol. 36, no. 1, pp. 157-178, 2012.

[49] F. D. Davis, R. P. Bagozzi, and P. R. Warshaw, "User acceptance of computer technology: a comparison of two theoretical models," Management science, vol. 35, no. 8, pp. 982-1003, 1989.

[50] F. D. Davis, R. P. Bagozzi, and P. R. Warshaw, "Extrinsic and intrinsic motivation to use computers in the workplace1," Journal of applied social psychology, vol. 22, no. 14, pp. 1111-1132, 1992.

[51] M. Kube, D. Hilgers, G. Koch, and J. Füller, "Explaining voluntary citizen online participation using the concept of citizenship: an explanatory study on an open government platform," Journal of Business Economics, vol. 85, no. 8, pp. 873-895, 2015/11/01 2015, doi: 10.1007/s11573-014-0756-y.

[52] D. C. Brabham, "MOVING THE CROWD AT THREADLESS," Information, Communication & Society, vol. 13, no. 8, pp. 1122-1145, 2010/12/01 2010, doi: 10.1080/13691181003624090.

[53] K. R. Lakhani and E. von Hippel, "How open source software works: "free" user-to-user assistance," Research Policy, vol. 32, no. 6, pp. 923-943, 2003/06/01/ 2003, doi: https://doi.org/10.1016/S0048-7333(02)00095-1.

[54] G. Hofstede, G. J. Hofstede, and M. Minkov, Cultures and Organizations: Software of the Mind, 3rd Edition ed. USA: McGraw-Hill, 2010.

[55] D. R. Compeau and C. A. Higgins, "Computer self-efficacy: Development of a measure and initial test," Mis Quarterly, vol. 19, no. 2, pp. 189-211, 1995.

[56] T. J. Winkler, O. Günther, and G. Trouvilliez, "Participatory urban sensing: Citizens' acceptance of a mobile reporting service," Ecis, no. 2012, pp. 1-10, 2012. [Online]. Available: http://aisel.aisnet.org/ecis2012/106.

[57] N. Kaufmann, T. Schulze, and D. Veit, "More than fun and money. Worker Motivation in Crowdsourcing – A Study on Mechanical Turk," Proceedings of the Seventeenth Americas Conference on Information Systems, vol. 4, no. 2009, pp. 1-11, 2011, doi: 10.1145/1979742.1979593.

[58] M. Garcia Martinez and B. Walton, "The wisdom of crowds: The potential of online communities as a tool for data analysis," Technovation, vol. 34, no. 4, pp. 203-214, 2014/04/01/ 2014, doi: https://doi.org/10.1016/j.technovation.2014.01.011.

[59] I. Mergel, "Social media adoption and resulting tactics in the U.S. federal government," Government Information Quarterly, vol. 30, no. 2, pp. 123-130, 2013, doi: 10.1016/J.GIQ.2012.12.004.

[60] S. Shimanoff, "Gender role theory," in Encyclopedia of communication theory, vol. 1, S. W. Littlejohn and K. A. Foss Eds.: Sage, 2009.

[61] A. H. Eagly, W. Wood, and A. B. Diekman, "Social role theory of sex differences and similarities: A current appraisal," The developmental social psychology of gender, vol. 12, no. 174, pp. 9781410605245-12, 2000.

[62] M. X. Yang, X. Tang, M. L. Cheung, and Y. Zhang, "An institutional perspective on consumers' environmental awareness and pro-environmental behavioral intention: Evidence from 39 countries," Business Strategy and the Environment, vol. 30, no. 1, pp. 566-575, 2021, doi: https://doi.org/10.1002/bse.2638.

[63] N. Ahmad et al., "Corporate social responsibility at the micro-level as a "new organizational value" for sustainability: Are females more aligned towards it?," International Journal of Environmental Research and Public Health, vol. 18, no. 4, p. 2165, 2021.

[64] J. F. Dovidio, J. A. Piliavin, D. A. Schroeder, and L. A. Penner, The social psychology of prosocial behavior. Psychology Press, 2017.

[65] C. W. Mullins, R. Wright, and B. A. Jacobs, "Gender, streetlife and criminal retaliation," Criminology, vol. 42, no. 4, pp. 911-940, 2004.

[66] S. L. Feld and R. B. Felson, "Gender norms and retaliatory violence against spouses and acquaintances," Journal of Family Issues, vol. 29, no. 5, pp. 692-703, 2008.

[67] L. Goldner, R. Lev-Wiesel, and G. Simon, "Revenge fantasies after experiencing traumatic events: Sex differences," Frontiers in psychology, vol. 10, p. 886, 2019.

[68] A. Lee, "Researching MIS," in Rethinking Management Information Systems : An Interdisciplinary Perspective: An Interdisciplinary Perspective, W. Currie and B. Galliers Eds.: OUP Oxford, 1999.

[69] F. Guay, R. J. Vallerand, and C. Blanchard, "On the Assessment of Situational Intrinsic and Extrinsic Motivation: The Situational Motivation Scale (SIMS)," Motivation and Emotion, vol. 24, no. 3, pp. 175-213, 2000, doi: 10.1023/A:1005614228250.

[70] K. Aquino, T. M. Tripp, and R. J. Bies, "How employees respond to personal offense: the effects of blame attribution, victim status, and offender status on revenge and reconciliation in the workplace," (in eng), The Journal of applied psychology, vol. 86, no. 1, pp. 52-9, Feb 2001, doi: 10.1037/0021-9010.86.1.52.

[71] J. F. Hair, G. T. M. Hult, C. Ringle, and M. Sarstedt, A Primer on Partial Least Squares Structural Equation Modeling (PLS-SEM). SAGE Publications, 2013.

[72] W. W. Chin, "Issues and opinions on structural equation modeling," Mis Quarterly, vol. 22, no. 1, pp. 7-16, 2003.

[73] K. K.-K. Wong, "Partial Least Squares Structural Equation Modeling (PLS-SEM) Techniques Using SmartPLS," Marketing Bulletin, vol. 24, no. 1, pp. 1-32, 2013. [Online]. Available: http://marketing-bulletin.massey.ac.nz/v24/mb_v24_t1_wong.pdf%5Cnhttp://www.resear

chgate.net/profile/Ken_Wong10/publication/268449353_Partial_Least_Squares_Structural_Equation_Modeling_(PLS-SEM)_Techniques_Using_SmartPLS/links/54773b1b0cf293e2da25e3f3.pdf.

[74] J. F. Hair, W. C. Black, B. J. Babin, and R. E. Anderson, 7th, Ed. Multivariate data analysis. Englewood Cliffs, NJ: Prentice Hall, 2009.

[75] R. P. Bagozzi and Y. Yi, "On the evaluation of structural equation models," Journal of the Academy of Marketing Science, vol. 16, no. 1, pp. 74-94, 1988, doi: 10.1007/BF02723327.

[76] J. C. Nunnally, Psychometric Theory. New York: McGraw-Hill, 1978.

[77] R. P. Bagozzi, Y. Yi, and L. W. Phillips, "Assessing Construct Validity in Organizational Research," Administrative Science Quarterly, vol. 36, no. 3, pp. 421-458, 1991, doi: 10.2307/2393203.

[78] R. P. Bagozzi, "Evaluating Structural Equation Models with Unobservable Variables and Measurement Error: A Comment," Journal of Marketing Research, vol. 18, no. 3, pp. 375-381, 1981, doi: 10.2307/3150979.

[79] C. Fornell and D. F. Larcker, "Evaluating structural equation models with unobservable variables and measurement error," Journal of marketing research, vol. 18, no. 1, pp. 39-50, 1981.

[80] J. F. Hair, C. William, B. Babin, and R. Anderson, "Multivariate data analysis," ed: Upper Saddle River, NJ: Prentice Hall, 2010.

[81] J. Henseler, G. Hubona, and P. A. Ray, "Using PLS path modeling in new technology research: updated guidelines," Industrial management & data systems, 2016.