The Contradictions of Social Media Crowdsourcing in Crises Management of War-torn Societies

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Abstract— This research aims to investigate the contradictions of social media crowdsourcing in crisis management in war-torn societies incorporating five intrinsic paradoxes. These contradictions were derived from the literature and practices of social media crowdsourcing in Syria. It concluded that these contradictions represent profound influential factors on the value of social media crowdsourcing in such crises. The identification and analysis of such contradictions enhances the efforts of reinforcing the positive interactions and diminishing the negative practices to support the value of social media crowdsourcing in crisis management. Furthermore, the research presents technical and ethical solutions to enhance the participation value of social media crowdsourcing.

Keywords—social media crowdsourcing; usefulness; call for peace; wisdom; truth; sense of community.

I. INTRODUCTION

Social media has become an integral part of people's daily lives. It has provided an unprecedented opportunity and preferred platform to communicate and collaborate [1]. Furthermore, it has been widely adopted in voluntary organizations as a means to create civic engagement and organize collective actions [2]. Recent emergencies and crises have shown the positive impact of using social media in the collective crises management [3].

Several studies [1][4][5] emphasizes the role of social computing and the advances in social media in empowering the concept of crowdsourcing. Crowdsourcing is a combination of the words outsourcing and crowd [6]. The term first appeared in 2006 to describe the act of taking a job traditionally performed by a designated agent and outsourcing it to an undefined group of people [7][8]. Crowdsourcing has emerged as an efficient way to solve a wide range of tasks [9]. However, previous research [10][11] confirmed that crowdsourcing is enabled only through the technology of the web including social media. Events of the current civil wars in the Middle East are showing new kinds of powerful crisis communities, which are made possible by new social media that supports crowdsourcing approaches.

In war-torn societies, social media crowdsourcing is tightly connected to the off-line society. It not only facilitates the integration of the offline and online environments, but also fosters on-the-ground activities. The antagonism and differences between and within the crowds become problematic when social media crowdsourcing is used to participate in crisis management in war-torn societies. In fact, it is the mirror of off-line contradictions. Usually, the crowd of war-torn society is not unified but is rather drawn in different crowds including loyalists, opponents and pacifists that are made up of different ethnic and religious subcrowds. The perception of social media crowdsourcing effects cannot be understood in isolation from the reasons of using it [5]. The literature has provided different fundamental explanations for the motivations of social media crowdsourcing. In contrast, crowdsourcing is encountering a wide range of risks and ambiguities resulting in contradictions that are derived from the syncretism of crowds that participate in crisis management, and from the decoupling that can be operated when such efforts are implemented on the social media. Such contradictions embedded in the social media crowdsourcing might harm crisis management efforts threatening the life and safety of people.

Resolving these contradictions became the challenge of crisis management stakeholders. Understanding such contradictions in a helpfully and ethically responsible manner is essential [7]. The current civil wars prove that the operators of social media services share the citizens of such societies the challenges of maximizing the value of social media crowdsourcing through minimizing contradictions in the practices of crowds. Furthermore, the investigation of crowdsourcing contradictions helps understand the structure of the online communities, which can connect to on-the-ground activities [4]. The analysis of these contradictions enhances the efforts of reinforcing the positive interactions and diminishing the negative practices to support the value of social media crowdsourcing in crisis management.

Based on the aforementioned discussion, the purpose of this research is to investigate the contradictions and their impact on participation value of social media crowdsourcing in crisis management in war-torn societies. Based on the previous literature review and following up on the Syrian crisis via social media, the present research has derived five intrinsic paradoxes. Furthermore, the research presents technical and ethical solutions to enhance the participation value of social media crowdsourcing in crisis management. The reminder of this paper is organized as follows: Section II provides a review of the literature research, which has been published in the subject area of social media crowdsourcing in crises situations. Section III presents the research model and the respective constructs. Finally, section IV concludes and outlines the future work.

II. LITERATURE REVIEW

Crowdsourcing can be described as an umbrella term for a set of tools and techniques that deal with the process of outsourcing work to large and possibly unknown groups of people [9]. In fact, disasters and crises are areas where crowdsourcing is having a real impact [4].

A review of the current literature reveals that the recent research on social media crowdsourcing in crises situations can be classified into three major categories. A considerable stream of research [2][4][5] was oriented to investigate the role of social media crowdsourcing in crisis management. It is worth mentioning that most of these studies has been dedicated to develop different crowdsourcing applications to involve the crowds in the crises management employing the unique capabilities of social media. The literature review also revealed that many of recent studies [1][12] investigated the role of social media crowdsourcing in generating and using big data during disasters and emergencies. A significant stream of research [7][12][13] intended to study different issues on the response to crises through the use and analysis of big data. The third category of literature included considerable body of research [14][15][16] conducted to determine motivations and uses of social media crowdsourcing via Mobile during disasters and crises. In this regard, a considerable body of research (e.g., [17][18]) has been conducted to investigate the role of social media in the efforts of search, rescue, and emergency response.

It is worth mentioning that the vast majority of previous studies addressed the topic of social media crowdsourcing in terms of natural disasters and short-term human-made emergencies and crises, such as terrorist attacks. Furthermore, they have revolved around the existence of a wide range of authorities, such as police, fire, emergency medical and other governmental authorities that can be relied upon to coordinate the efforts of emergency and crisis management. In such cases, people directly affected by the crisis are often excluded from information processing and interpretation, and marginalized in subsequent response decision-making that affect their very lives [13]. In addition, most of the aforementioned studies proposed that the social media crowd is unified.

Although there is an extensive and evolving interest in the role of social media crowdsourcing in crises management, study on contradictions of online crowds' practices is still very limited and no study had been undertaken to examine the contradictions of social media crowdsourcing in crises management of war-torn societies. Additional efforts for understanding this contradictions are worthwhile.

III. RESEARCH MODEL

The research model has two main tasks, including diagnoses contradictions and proposing solutions to them. The investigation of contradictions embedded in the social media crowdsourcing during civil wars seeks to identify possibilities for capturing the positive practices and diminishing the negative practices associated with it in order to support the value of social media crowdsourcing in crisis management. However, the research model represented in Figure 1 proposes

that, during large-scale and long-term crises that arise out of civil wars, the participation in crisis management via social media crowdsourcing incorporates a number of contradictions in the practices of crowds. These contradictions represent profound influential factors on the value of social media crowdsourcing in such crises conditions.
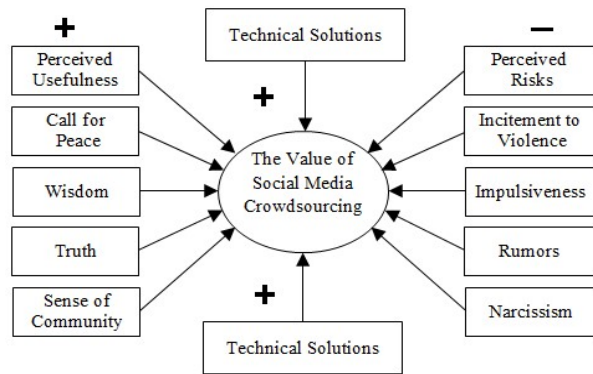

Figure 1. The research model

The present research suggests two main solutions, that can be classified into ethical and technical solutions. This is to minimize the negative impact of such contradictions on the efforts of participating in crisis management via social media crowdsourcing. Based on the previous literature review and following up on the crowds of civil wars on social media in the Syrian crisis, the present study has derived the contradictions as shown in Table I.

TABLE I. CONTRADICTIONS OF SOCIAL MEDIA CROWDSOURCING

+	References	—	References
Perceived Usefulness	[3][5][14]	Perceived Risks	[16]-[23]
Call for Peace	[3][5][25]	Incitement to Violence	[24] - [26]
Wisdom	[8][27][28]	Impulsiveness	[10][15][30]
Truth	[3][5][12]	Rumors	[23][30][31]
Sense of Community	[14][26][34]	Narcissism	[35]-[38]

Below, is a more detailed discussion of each dimension research model. Later on, the research presents technical and ethical solutions to enhance the participation value of social media crowdsourcing in crisis management.

A. The Value of Social Media Crowdsourcing

The convergence of social computing has generated new horizons to explore and use the capabilities of social media crowdsourcing in the humanitarian crises, especially those associated with armed conflicts in the civil war-torn societies. With the absence of governmental institutions, millions of people are still steadfast in their country and struggling to survive using all means available. In such case, citizens have only themselves to rely on, coping with unpredictable events, and encouraging each other to stay in their homes in spite of the

risks. In such situations the collaboration of citizens is becoming more and more indispensable, where citizens are moving from a reactive behavior to a proactive outlook characterized by free involvement and self-responsibility [2][3]. In such large-scale and long-term crises, one of the greatest challenges to those involved in crisis management efforts, including citizens, is to have efficient, stable, and accessible tele-communication platforms for reaching a large amount of people on a limited amount of time and resources [2][3][4].

The effectiveness of social media tools, including SNSs, image and video hosting sites, Wikis, and blogs, has been increasing in every area of human life in recent years [5]. In the past few years, the initial role of social media as a means to keep in touch with friends, family and colleagues has evolved and they are becoming a more important means of communication and collaboration during emergencies, disasters, and crises [6]. Nowadays, Syrians are employing are employing social media crowdsourcing effectively in exchanging, disseminating, and sharing information, solutions, and advices on how to deal with the different and complex features of the crisis. These features include securing the basic human needs, such as foods, drinkable water, emergency medical centers and necessary medications, fuel, and identifying the sources and places of their availability. They also include identifying the safe places and roads and early warning for new conflict hot spots. Mobile social networking has also provided an interactive platform to transfer the public needs, trends, opinions, and mood to the different parties of the crisis and promote the reconciliations and settlements between all parties. They are playing a vital role in transferring the truth of events, hardship, miseries, tribulations of humans under this crisis to the outside world, and reuniting refigure families, and following up the affairs of missing and abducted persons. In Syrian case, it has been of great value for Syrians and the world to satisfy the need to have the latest and unique information available during crises. The growing phenomenon of citizens' journalism through social media has been a great value in providing the first-hand account of Syrian crisis events as they occur in the forms of images, video and audio messages, and information, thus contributing to the enhancement of the general public' situational awareness at real-time. The participants continually negotiate and direct the tension between the negative and positive contradictions to determine the continuity of participation value in social media crowdsourcing.

B. The contradictions of Social Media Crowdsourcing

1. Perceived Usefulness Versus Perceived Risks

In the past few years, the initial role of social computing as a tool to keep in touch with friends, family and colleagues has evolved and become more important mean of communication during emergencies, disasters, and crises [14]. Social media crowdsourcing provides an online environment to communicate, track, and share factual information and hard facts in real time to avoid keeping the crowd in the dark [3] [5] [14]. Furthermore, it provides the people with the opportunity

to engage actively in the crises management rather than being merely passive information consumers [5][14].

In Syrian civil war, civilians are employing social media in disseminating, analyzing and sharing information and advices about the sources and places of foods, drinkable water, fuel, emergency medical services and necessary medications. In such societies, social media also represents a valuable channel to send an early warnings raising awareness of the risks and how to respond and act in emergency situations.

As tempting as the capabilities of social media might appear, the incorporation of these new media into the repertoire of crisis management comes with risks that are cannot be neglected. In general, when dealing with any form of outsourcing of tasks, including crowdsourcing, the risks are non-trivial especially for groups that are more distant geographically, culturally, and intellectually where many situations arise that cannot be foresee [21][22]. According to Buecheler et al. [10], with no pre-defined contracts between parties like in traditional outsourcing, crowdsourcing is an extreme case of dealing with the unknown, where the individuals of the crowd are a priori unknown. In essence, by engaging in social media crowdsourcing, the people decide to deal with various degrees of risk of the free actions of others. A number of researchers (e.g., [16][19]) agreed that because of the perceived risks of social media use, users may change their evaluation of membership value over time.

In the periods of political unrest or civil wars, the personal information could lead to activities being left in a vulnerable situation that jeopardizes their wellbeing [5][23]. Protecting activists is one of the most important challenges social media crowdsourcing faces in such societies, particularly in view of the surveillance techniques used by conflict parties to identify the online opponents [5]. Photos, video footage, message or status updates may contain a visual evidence of an individual being present and help identify his identity and disclosing of private and confidential personal details [23]. In such circumstances, activists social media crowdsourcing are encountering a wide range of risks and threats, including, but not limited to, exposing the private information, identity theft, detention or imprisonment, harassment, threats to relatives, torture, kidnapping, or even killing. In many instances, the use of social media by members of the crowds can result in harm to specific individuals who were erroneously identified through vigilante justice and potential harm to responders, including members of the crowd, who may be operating in a crisis [23].

2. Call for Peace versus Incitement to Violence

In war-torn countries, striving to live in peace is a multidimensional motivation that can be fit as a title to the needs for survival and safety. A review of pages, blogs, videos, and posts reveals a third active crowd involved in the current crises striving to end the war. These neutral groups are working hardly to provide reliable information about events of crisis. They are promoting peaceful coexistence, forgiveness, reconciliation, and rejection of foreign interferences. They look for all parties in the conflict in a kindly and conciliatory manner. Sometimes they attack all the parties holding them the

responsibility for the killing, destruction, and the displacement of millions of civilians.

Social media crowdsourcing has provided an open arena to these groups to deliver messages about disarmament, peace building, and reconciliation [3][5]. They have a permanent online presence, through their posts, comments, and likes on the online pages and blogs of the parties to the conflict or what so called loyalists and opponents. Furthermore, social media crowdsourcing has allowed the voices of ordinary citizens to be amplified communicating and submitting human rights abuses and committed war crimes. In the Syrian crisis, it has played an influencing role in exposing the use of banned weapons, calling to neutralize civilians and populated residential areas, and maintaining ancient relics. Unfortunately, the voice, activity, and number of these groups are less than those who call for violence taking side to one party of the conflict.

The promotion of violence is a common trend in civil armed conflicts. The growing tension online is going parallel with cases of actual violence [24]. Many previous studies [24][25][26] affirmed the role of social media in catalyzing and amplifying violence by one group against another. Unfortunately, social media became a platform for organized hate groups to recruit, steering, and organize attacks against their antagonists. For example, in the current Syrian civil war, the conflict parties are using social media to incite violence that is fueled by deeply rooted hostility between different ethnic, religious, ideological groups or other minority communities. Antagonists have also used social media to explain how their opponents were planning actions to attack and evict individuals and communities in order to justify the social chaos and vigilante violence against a particular political, ethnic or religious group or any antagonist.

The promotion of extremist rhetoric encouraging violent acts is also a common theme across the terrorist social media platforms [25][26]. Social media crowdsourcing has provided a unique opportunity to disseminate the terrorist ideology and broadcast its messages around the world under cover of religion. Terrorist organizations have increasingly turned to the social media to advocate the incitement to violence using variety of messages promoting and glorifying acts of terrorism, such as suicide attacks.

3. Wisdom versus impulsiveness

The wisdom of crowd is probably one of the first ideas that come to mind when referring to crowdsourcing. In the age of social media, crowdsourcing can be seen as online collective problem solving and a synergy of skills and resources to share wisdom to achieve collective objectives [27][28]. The power of crowdsourcing and harvesting the wisdom of the crowd stand on the collective collaboration through the ability of a group to find better solutions to the same problems, solve more problems than its individual members, and engage in intellectual collaboration in order to create, innovate, and invent [8][27][28]. The most recent studies of crisis management [3][5] reveal that social media supports the creation of informal users' networks facilitating the flow of ideas, and have an important role in the collective generation,

dissemination, sharing, and refining of knowledge to assess and response to emergencies.

The outcome of wisdom of the crowd depends to a great extent on the level of coordination and collaborative efforts of crowd members participating in crisis management [5][8]. According to Bellomo et al. [29], unanticipated and unintended irregular motion of individuals into different directions due to strong and rapidly changing forces in crowds lead to the collective confusion and chaos raising the challenge of crowd impulsiveness. Actually, a major challenge that crisis management faces with social media crowdsourcing is the multiplicity and heterogeneity of players and channels of communication that exist during a crisis situation. In this regard, Buecheler et al. [10] demonstrated the risk involved when using crowdsourcing for decision making and to what extent the assumption about the wisdom of the decisions of crowd agents is justified. Roman [15] also explained the inherent weakness of crowdsourcing differentiating between the wisdom of crowds and the "mob that rules" in terms of accuracy, verity, correctness, and the reliability of exchanged information. Polarization between the perceptions of various conflicting crowds is a key issue [3]. Too much data within little time might also trigger fear and anxiety and eventually result in mass panic [7]. According to Kotsiopoulos [30] activists, respondents and security officers may be put at risk by citizens inadvertently exposing sensitive information. The data being inputted by individuals can include moving and still images, location information, temporal information descriptions of needs as well as other information [7]. As a result, existing data sets become quickly outdated and do not reflect people's experience of their current environment.

4. Truth versus rumors

The content of the social media can be the primary source for knowing better and understanding more accurately what is really happening [3][5][14]. The growing phenomenon of citizens' journalism has been a great value in providing the first-hand account of events as they occur in the forms of images, video and audio messages. Many of previous studies (e.g., [1][2]) show that information obtained through crowdsourcing is often more detailed and just as accurate as the information gathered through official channels.

When civilians are faced with uncertainty and lacking a full knowledge of risks, they will look to trusted sources of information for guidance [12]. Actually, the literature reveals widely divergent and mixed views in addressing the truth issues raised by the use of social media in crises. Many of authors (e.g., [3][5][12]) have perceived social media to be more trustworthy than traditional or formal media channels during emergencies and crisis. At the same time there is an apparently contradictory trend (e.g., [23][31]), which believes that the absence of a thorough ethical, legal, and verification framework contributes to the general skepticism towards the trustworthiness of social media in crisis situations. However, the aforementioned views have expressed their concerns, with varying degrees about the trustworthiness of information provided through social media, reliability and credibility of digital volunteers, responsibility and accountability of ICT

providers, and the use of misinformation as a weapon of psychological warfare waged by opponents against each other.

War-torn societies live in a world in which vast amount of data are created and stemming from various sources through social media on a constant and ongoing basis. The content of social media does not follow a process of validation to confirm its truthfulness. This abnormal big crisis data represents an area of concern constituting a major challenge against the trustworthiness and competence of such data. For example, rumors, deceptive information, lies, half-truths and facts, myths, counterfeit and fake videos and statements that are spreading on social media became essential elements in the narration of the events in the Syrian civil conflict. Reposting and sharing can make the rumors spread very quickly and get out of control. This could lead to panic in a crowd, which would not be justified by facts but only spread through misinformation [3]. Incidents in Syria crisis showed that crowds have utilized social media to take law enforcement into their own hands based on false information suggesting that certain individuals as being perpetrators [30]. Furthermore, when reporting about a crisis event, people can use different slangs and choose a hashtag or topic they find relevant, making it very difficult to understand the actual content of a post [2]. This results in redundancy of information on different social media tools holding the risk of conflicting facts [31].

5. Sense of Community versus narcissism

The sense of community concept refers to the individuals' subjective feeling of attachment and belongingness to a bigger and stable structure, which can be relied upon for a variety of purposes [32]. People with a strong sense of belonging to a community feel a strong emotional connection to the rest of the members, who support each other and believe that the community can fill their needs and indeed does so. The literature [26][32][33] revealed that the interactive nature of social media helps build a sense of community among individuals from different geographical locations and backgrounds, encouraging the creation of networks to share their feelings, thoughts, and assist each other. Social media and more specifically, SNSs have provided an unprecedented opportunity to bring individuals and groups of people together constituting a new kind of societies seeing beyond the self. According to Subba and Bui [33], the rise of SNSs is resulting in a greater sense of participation, less dependence on official expertise, and a greater trust in collaborative problem solving.

In war-torn societies, SNSs can help create a sense of community that gives individuals the feeling that they are not alone in the crisis and that there are others experiencing similar hardships and difficulties [14]. They have provided a fertile ground for sympathy and empathy sharing the pain of victims. Howell and Taylor [34] explained that what became apparent during crises events is the outpouring of support within and outside communities, and while there was a range of reasons for people starting up community pages and getting involved in social media, the overwhelming driver was a sense of community.

Social media has revealed an entirely new method of self-presentation. A major characteristic of social media is that anyone can create a platform to voice his thoughts and set up his own online participations. The social media represents a source of individual appearance and record the self at the scene of a crisis [23]. Many studies have examined the effects of social media on the increased levels of narcissism [35][36][38]. Narcissism is a pervasive pattern of grandiosity, need for admiration, and an exaggerated sense of self-importance [38]. It is associated with positive self-views traits, including intelligence, physical attractiveness, and power to create a positive impression. The narcissist, rather than experiencing inner growth, is on a path of obsessive focus on self, which acts as a barrier to positive relationships with others. However, social media allows people in crises situations to employ social relationships in order to regulate narcissistic esteem. According to Simsek [37], they can even have more than one identity to present themselves as a complete individual. Narcissists do not focus on interpersonal intimacy, warmth, or other positive aspects of relational outcomes. Instead, they use relationships to appear popular and successful [35]. Posting of selfies on social media is an major trait of narcissism [37].

In civil war, the need of narcissists for sensational coverage of events may create ethical problems when citizen journalists quickly assign blame under weak supporting evidence and exploit the vulnerability of the victims without respect for their opinions, privacy or emotions. Another example is taking selfies in front of victims' bodies to the people killed in the war.

B. Ethical and Technical Solutions

The contradictions of social media crowdsourcing in war-torn societies are showing that the most prevalent challenges revolve around ethical infringements and technical lacunas that have to be addressed. Therefore, the present research suggests ethical and technical solutions to maximize the participation value of social media crowdsourcing in crisis management.

1. Ethical solutions

Social media crowdsourcing is still an evolving field and many of the ethical issues it raises have yet to be resolved. As an increasing number of crowds members involved in crisis management of war-torn societies come to the realization, understanding how to use social media crowdsourcing in an ethically responsible manner is essential to minimize the contradictions of social media crowdsourcing [7]. In war-torn societies, social media crowdsourcing is tightly connected to the off-line society. It not only facilitates the integration of the offline and online environments, but also fosters on-the-ground activities. A malicious member could easily trick crowds to participate in unethical activities online and off-line [2].

The development of appropriate ethical policy can help manage the dilemma between the opportunities and risks of social media crowdsourcing in crises of war-torn societies. In this regard, these communities can leverage the collective knowledge of their members in the form of the ethical principles that define a set of universal principles for humanitarian action. It is important that the providers of social media tools and the digital humanitarian communities emphasize ethical humanitarian service based on a set of ethical rules, standards, codes, values, and philosophy to be followed

by the crowds and their members. The ethical policy need to be formulated under the following principles:

- Support the investigation of truthfulness that complies with facts and reality.
- The devised policy must include prescriptive steps to inform and alert the participants in crowdsourcing efforts to behave ethically and avoid dragging behind malevolent actors and crisis profiteers.
- The humanitarian imperative comes first. The protection and neutralization of civilians and populated residential areas, and maintaining ancient relics must be apriority.
- Principles must mandate that data on internally displaced people be given special protections and safeguard their anonymity or privacy. The protection of crowdsourcing participants necessitates hiding any visual evidence of an individual being present and help identify his identity.
- Provide a democratic environment for citizens to participate in the efforts of such crises in terms of freedom to speak, hold opinions, express ideas, discussion, and consensus in which all participants are considered and treated equally.
- The online crowds must provide vulnerable people with assistance without discrimination as to geographic, racial, gender, ethnic, religious beliefs, class or political opinions.
- The crowds must prevent the hate speech, which attacks persons or groups on the basis of certain attributes, such as ethnic origin, religion, gender, race, disability, or political orientation.

2. Technical Solutions

The current civil wars prove that the operators of social media services share the citizens of such societies the challenges of maximizing the value of social media crowdsourcing through minimizing contradictions in the practices of crowds. The present research suggests the following technical solutions to achieve this objective:

- The providers of social medial tools and more specifically SNSs, such as Facebook can add new type of pages or groups that are designed to support the crowdsourcing efforts in crises management.
- As a rule, the user profile data should be protected by design and the sensitive data should never be shared with third parties, nor even be accessible to operators.
- The providers can develop crowd sensing applications based on geospatial crowd sensing to collect data about specific events at particular locations or with dynamic and uncertain participant locations.
- Provide citizens with the best practices, instructions, and guidances to deal with emergencies, evacuation, relieve, and rescue in forms of video, texts or images.
- Provide large scale maps showing the safe places and roads, evacuation routes and conflict hot spots.
- Providing new filtering tools to detect and prevent using any images or video from old or unrelated events.
- Develop new collections of symbols to distinguish between the different kinds of events. Such symbols can help in

reducing the redundancy of information making it easier and faster to access specific content that cover a specific event. These symbols are designed to represent, for example, distress calls, calls for blood donation, location of field hospitals, evacuation routes and conflict hot spots.

- Develop new functions to evaluate the reliability and credibility helping users know better which pages, groups, blogs, and digital volunteers can be trusted to become the source of reference. For example, the output of evaluations can be displayed in the form of gradient colors, ranging from green for highly trusted to red for highly untrusted.

IV. CONCLUSION AND FUTURE WORK

Recent emergencies and crises have shown the positive impact of using social media in the collective crises management. Events of the current civil wars in the Middle East are showing a new kind of powerful crisis community, which is made possible by new social media that supports crowdsourcing approaches. The antagonism and differences between and within the crowds become problematic when social media crowdsourcing is used for crisis management purposes in war-torn societies.

Crises arising out of civil wars are very complex, bringing contradictory practices and discursive contexts [6]. Resolving these contradictions becomes the challenge of crisis management stakeholders. Such contradictions embedded in the social media might harm crisis management efforts threatening the life and safety of people. Therefore, the present research aimed to investigate the contradictions and their impact on participation value of social media crowdsourcing in crisis management in war-torn societies incorporating five intrinsic paradoxes. The research presents technical and ethical solutions to enhance the participation value of social media crowdsourcing in crisis management.

The investigation of these contradictions provides a conceptual map, which aims to make sense of the ambiguities and contradictions inherent in social media crowds in war-torn societies. The development of appropriate ethical policy can help manage the dilemma between the opportunities and risks of social media crowdsourcing in crises of war-torn societies. Such communities can leverage the collective knowledge of their members in the form of the ethical principles that define a set of universal principles for humanitarian action based on international humanitarian law. The current civil wars prove that the operators of social media services share the citizens of such societies the challenges of maximizing the value of social media crowdsourcing through minimizing contradictions in the practices of crowds. The present research suggests new type of pages or groups that are designed to support the crowdsourcing efforts and crowds participation in crises management.

There are some limitations, which can serve as directions for future research. The research model needs to be developed and tested empirically. Measurement items can be formulated in terms of motivations and threats or positive and negative practices. Data can be collected from Syrian refugees or the Syrian society itself using an online survey. There are thousands of pages and groups on social networking sites,

created by Syrian activists, dedicated to Syrian crisis issues. These platforms can be employed effectively to distribute the online survey. Furthermore, the future research needs to investigate the factors affecting the appearance of these online contradictions. The future research also has to discuss in more details how each solution will address the contradictions. Finally, the suggested technical solutions need further technical validation and intensive research in order to evaluate their applicability.

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