

# **Mobile Crowdsourcing Technology Acceptance and Use In the Crises Management of Arab Spring Societies**

**Saad G. Yaseen**

**Khaled S. Al-Omoush**

**Al-Zaytoonah University of Jordan**

## **Abstract**

The purpose of this research is to develop a conceptual framework investigating the determinants of mobile crowdsourcing technology acceptance and use in the crises management of Arab Spring societies. To achieve its objectives, this research has extended the unified theory of acceptance and use of technology (UTAUT2) to study the major determinants of the behavioral intention to accept or adopt crowdsourcing technology. The proposed extended model incorporates five constructs, including performance expectancy, effort expectancy, subjective norms, hedonic motivation, and cultural values.

## **Introduction**

The explosive growth of using social networking in such historical events as Arab spring uprising has provided enabling platform for conducting mobile crowdsourcing in crises management. Although in the literature there is an extensive use of crowdsourcing as a new business paradigm, the literature lacks crowdsourcing technology acceptance model that explains the determinants of the users' behavioral intention to use this technology in the Arab setting culture.

It is highly acknowledged that organizations in the Arab business setting are late adopters of IT applications (Sabri, 2004; Yaseen; 2005; Yaseen; 2008; Sukkar and Hasan; 2005; Abu shanab et al; 2010). Despite the increased usage of mobile and Internet applications, recent studies indicated that Arab people are still reluctant to use and accept Internet applications technology for various economic and cultural reasons (Al Sukkar and Hasan; 2005; Akour et al; 2006). Thus, this research concentrates on providing rich understanding and insight into the influence of the major determinates on the behavioral intention to adopt and use mobile crowdsourcing technology in such cultural environment on Arab World. Based on the unified theory of acceptance and use of technology (UTAUT2) (Venkatesh et al, 2012), the proposed extended model incorporates five constructs: performance expectancy, effort expectancy, subjective norms, hedonic motivation, and cultural values.

## **1.1 Collective Intelligence and Crowdsourcing:**

Collective intelligence (CI) has been existed in a very long time. However, the explosive growth of using Internet and social computing has enabled to emergence the new but not a magic paradigm of CI applications (Malone, 2008; Malone et al., 2010). CI can be seen as an alternative of social media power within convergence culture (Jenkins, 2006) or an intelligence factor that explains groups performance on a wide variety of tasks (Woolley et al 2010) . It is a new digital based form of we. The new and potent "We" is far smarter than singular me (Libert and Spector, 2008).

Thus, CI is a determining factor in competitiveness, creativity, and human development in the knowledge economy (Levy, 2009). As a part of his utopian vision Levy conceptualized that in our new learning and knowledge economy we are passing from Cartesian cogito: I think, therefore, I am, to cogitamus: we think, therefore, we are (McGonigal, 2006). The product of this new culture (we) would be a new digital application forms of the CI. A review of literature confirms that CI has been widely used as a multidisciplinary field of social psychology, sociology, cognitive science business, social computing, and information sciences (Riedl, and Blohm, 2010; Leimeister, 2010; Steinbock et al, 2002; Howe, 2008; Atlee, 2008).

Recently, CI can be seen as a shared memories, ability of virtual communities, online distributed problem solving, human capacity to engage intellectual cooperation, a synergy of skills and resources to learn, and to share wisdom (Levy, 2010; Gan and Zhu, 2007; Lesser et al, 2012; Jenkins, 2006; Malone, 2012). According to Atlee and Zubizarreta (2010) CI is a coherent integration of our diversity that is greater than any or all of us could generate separately, just as an orchestra is greater than the sum of its instruments. That is, CI is more than collected intelligence, it is an emerging augmentation of intelligence, collectivism distributed mind, and digital networking. Moreover, the synergy between CI and mobile social computing is an emerging stream of research and is still in its early stages coping with mobile technology and social computing. Crowdsourcing has been used to harness the power of crowd. The term first appeared in Wired magazine in Jun 2006 in an article by Jeff Howe who defined crowdsourcing as the act of taking a job traditionally performed by a designated agent and outsourcing it to an undefined group of people" (Howe, 2006). Thus, crowdsourcing is the online outsourcing of a task to individuals in the form of open call (Howe, 2008). It is emerging new business model in which people collaborate to complete a task (Geerts, 2009; Vukovic, 2009; Anderson, 2011). Notable examples of this model include Threadless, i Stockphoto, Nasa Click Workers, Innocentive, Nine Sigma, and Crowd Spring. Jeff Howe (2006) describes crowdsourcing Internet-based outsourcing model that harnesses the CI from the crowd. Crowdsourcing leads to the wisdom of crowds. Surowiecki

(2004) asserted that large groups of people are smarter than an elite at solving problems, fostering innovation, and coming to wise decision (Surowiecki, 2004; zha, 2007).

However, recent years have seen an explosion of online social networking as a cyberspace to bring crowdsourcing into a mobile context. Furthermore, advanced social cloud computing and crowdsourcing technologies were utilized in the emergency management (Howe, 2010). The potential of mixing mobile technology and crowdsourcing offers vaster resources of innovation (Liu et al, 2011) Mobile social networking technology is a powerful platform for leveraging the crowdsourcing in large-scale events or in a crisis management. It provides opportunities for empowering collaborative social concerns. Yet mobile space an interactive social media means is one of the key technologies of crowdsourcing (Levy, 2001). The growing use of mobile based social networking enables an unprecedented growth of crowdsourcing for solving problem and making predictions. Thus, increasing mobility of crowdsourcing demands more insight into users' mobile crowdsourcing technology acceptance behavior in the Arab Setting Culture.

### **1.2: Mobile Crowdsourcing Technology Acceptance:**

Information technology acceptance is one of the most mature streams of information systems research (Venkatesh et al, 2012; 2007, Venkalesh and Bala, 2008). Technology acceptance model (TAM) has been used as a leading model or extended applied model in a various business contexts (Bagozzi, 1990; Bagozzi and Lee, 1999; Venkatesh et al, 2007; Kouforis, 2002; Hong et al; 2006; Benbasat and Barki, 2007).

Most of these studies replicated (TAM) model while some of them extended (TAM) by adding new constructs as predictor of behavior intention to use a specific system. Technology acceptance model (TAM) introduced by Davis (1985) is an adaptation of the theory of reasoned action (TRA) model (Fishbein, 1967; Fishbein and Ajzen, 1975). TAM posits that two particular beliefs, perceived usefulness and perceive ease of use are a major of user's intention to use IT (Davis et al. 1989). Venkatesh et al (2003) suggest a comprehensive synthesis of eight promises theories of technology acceptance and derive a unified theory of acceptance and use of technology (UTAUT). UTAUT contains four core constructs: performance expectancy, effort expectancy, social influence and facilitating conditions.

However, Venkatesh, Thong and Xu (2012) extend the unified theory of acceptance and use of technology to study IT acceptance in a consumer context. The new model called (UTAUT2) incorporates three constructs into UTAUT: hedonic motivation, price value, and habit (Venkatesh et al, 2012).

This research presents an extended (UTAUT2) model by identifying key additional constructs, namely cultural values and subjective norms to be integrated into (UTAUT2) to explore the major factors influencing mobile-based crowdsourcing technology acceptance among Arab students in Jordan.

## **2. The extended (UTAUT2) Model**

The research model proposes that performance expectancy, effort expectancy, subjective norms, Hedonic motivation are major determinants of the behavioral intention to accept or adopt crowdsourcing technology. The cultural values have been repeatedly mentioned as a profound influential factor on the acceptance, adoption, and behavioral intention to use IT in every society as a restraining or driving force. Therefore, the proposed extended (UTAUT2) Model investigates the impact of cultural values on behavioral intention to use mobile crowdsourcing technology. Below each dimension of the extended (UTAUT2) Model are discussed in more details.

### **1.2 Performance Expectancy**

Performance expectancy refers to the degree to which an individual believes that using the system will help to attain gains in job performance (Venkatesh et al., 2003). It captures the construct of perceived usefulness in TAM, job-fit in MPCU. Performance expectancy also is parallel to the extrinsic motivation in the motivational model by Davis et al. (1992) as key predictor that explains user adoption and use of new IT (Venkatesh et al., 2003). In this framework, a number of recent studies (e.g. Kaufmann and Schulze, 2011; Bott and Young, 2012; Goncalves et al., 2013) revealed that crowdsourcing performance is not just a matter of channel or medium, but also a matter of motivation. For example, Bott and Young (2012) considered performance expectancy as a direct determinant of the crowdsourcing motivation. Kaufmann and Schulze (2011) found that the extrinsic motivational categories have a strong effect on online crowdsourcing realization. Goncalves et al. (2013) described how the use of motivation can explain significantly the improvement of task performance. In terms of instrumentation, Liu et al. (2012) investigated the performance of mobile-based crowdsourcing based on expected response speed and response quantity. Mashhadi and Capra (2011) discussed the performance of mobility-based crowdsourcing through ensuring the quality of crowdsourced work. Lee and Cho (2011) found that perceived usefulness is a key determinant of an attitude toward Facebook use. Calisir et al. (2013) concluded that perceived usefulness has a significant effect on use of social networks on smartphones among the students. Al-Ammary et al. (2014) also confirmed that perceived usefulness is a vital factor for predicting the students' behavioral intention to use social networks via mobile devices.

### **2.2 Effort Expectancy**

Effort expectancy refers to the degree of ease associated with the use of the information technologies (Venkatesh et al., 2003). It was derived from the concepts of ease to use in TAM. It also captures the complexity factor in the Model of PC Utilization (MPCU) by Thompson et al. (1991) to measure the degree to

which an innovation is perceived as relatively difficult to understand and use. The individual and collaborative efforts of crowds are the foundation of CI. Furthermore, the outcome of CI depends to a great extent on the level of individual and collective efforts of crisis management teams (Staskeviciute et al., 2006; Gan and Zhu, 2007; Luft, 2010; Osarenkhoe, 2010; Schut, 2010; Bothos et al., 2012). Using mobile crowdsourcing in crises management requires a continuous flow of tremendous efforts. These include informational, cognitive, sharing, coordinating, discussing, problem-solving, decisional, and learning efforts of very large groups of people (Heylighen, 1999; Liang, 2004; Staskeviciute, et al., 2006; Gan and Zhu, 2007; Sheremetov and Rocha-Mier, 2008; Thomas et al., 2008). The importance of effort expectancy also stems from the rapid and continuous advances in mobile technology and social networking features and applications that require continuous efforts from users to improve experience, know, and learn how to use the new functions and features. The knowledge and experiences diversity in using the newest smart collaborative features of mobile and social networking technology impose more difficulties, thus, efforts on the participants to cope with the best skills and practices that others have in using such technology. Lee and Cho (2011) concluded that perceived ease influential factors in explaining the formation of an attitude and actual use of Twitter and Facebook in a mobile broadband environment. Calisir et al. (2013) found that perceived ease of use has a significant effect on use of social networks on smartphones. Likewise, Al-Ammary et al. (2014) found that perceived ease of use is a vital factor for predicting the students' behavioral intention to use social networks via mobile.

### **2.3 Subjective Norm**

Venkatesh and Davis (2000) used subjective norm in TAM2 to investigate the person's perception that most people who are important to him think he should or should not perform the behavior in question. The concept was included earlier in MPCU model under the term social norms (Thompson et al., 1991). Subjective norm in UTAUT is represented as social influence to describe the degree to which an individual perceives that important others believe he or she should use the new system. While the crowd interaction and collaboration emphasizes the social aspect of CI, the mobile and social networking sites belong to the social computing age. The significance role of social influence in mobile crowdsourcing is coming from the need to sufficient crowd participation and attracting the most effective collaborators for the success of a crowdsourcing initiative. In this regard, Liu et al. (2012) discussed the importance of social facilitation and loafing effect, social psychological incentives, and game-based incentive to motivate individuals to promoting increased contributions in mobile crowdsourcing. On the other hand, the previous research (e.g. Lee and Cho, 2011; Calisir et al., 2013; Al-Ammary et al., 2014) concluded that the subjective norm has a significant effect on attitude, behavioral intention, and actual usage of social networking sites via mobile. A number of studies (e.g. Demirbas et al., 2010; Gupta et al., 2012) investigated the friends influence on the adoption of mobile crowdsourcing.

### **2.4 Hedonic Motivation**

Web 2.0 applications have a special characteristic that can be used for utilitarian or hedonic motivation, providing an opportunity to examine user motivations from different perspectives (Wang et al., 2009). Davis et al. (1992) described hedonic value as the perception that users will want to perform an activity for no apparent reinforcement other than the process of performing the activity. Venkatesh et al. (2012) added hedonic motivation to UTAUT2 describing the fun or pleasure derived from using a technology as a predictor of behavioral intention. Actually, the constructs of attitude toward behavior, affect toward, and intrinsic motivations that included in the previous acceptance IT models tap into an individual's liking, enjoyment, joy, and pleasure associated with IT adoption and usage (Venkatesh et al., 2003). The key to defining a system as hedonic or utilitarian is that extrinsic motivations, such as more friends in a social network, getting paid more, winning a prize, alone will not sustain a person's use if intrinsic motivations (e.g., fun, curiosity, relaxation, enjoyment, socialization, friendship, and immersion) are not addressed adequately (Lowry et al., 2008). Many researchers (e.g. Moon and Kim, 2001; Heijden; 2004; Venkatesh et al., 2012) revealed that hedonic motivations are conceptualized as perceived enjoyment. Kaufmann and Schulze (2011) concluded that intrinsic motivation aspects are more important, especially the different facets of enjoyment based motivation that the contributors in crowdsourcing experiences through their participation. In the context of examining user behavior of mobile learning using UTAUT, Huang et al. (2007) defined perceived enjoyment as the extent to which the action of using the technology is perceived to be enjoyable in its own right, apart from any performance consequences that may be anticipated. Al-Ammary et al. (2014) investigated the effect of perceived enjoyment on the acceptance and use of SNS via mobile as learning tools. Another study among students in Turkey found that perceived enjoyment has a positive effect on the use of social networks via Smartphones (Calisir et al., 2013).

## **2.4 The Impact of Cultural Values**

The cultural values have been frequently mentioned as a profound influential factor on the acceptance, adoption, and behavioral intention to use IT in societies as a restraining or driving force. In the context of Arab cultures and its impact on IT adoption, Hill et al. (1998) concluded that the cultural beliefs and values of different groups in the hierarchal social structure of Arab society differ markedly in terms of how they construct a meaning for technology in their everyday work and personal lives. Straub et al. (2001) also revealed that Arab cultural beliefs are a very strong predictor of resistance to IT transfer. Loch et al. (2003) investigated the diffusion of the Internet in the Arab world focusing on the role of social norms and technological culture. He found that a strong majority of respondents indicated that Internet acceptance was not without significant reservation. Akour et al. (2006) agreed that the Arab people have a negative attitude about the social impacts of the Internet and did not want it to replace their traditions, values, and customs of interactions and caring. However, according to Hofstede's (1980) typology, the Arab countries were classified as having high power distance, high uncertainty avoidance, low individualism, and high masculinity. Such a society may not be ideal for ICT including household Internet.

There are reasonable grounds to investigate the impact of cultural values on socialization and releasing the mobile crowdsourcing in the crisis management. Many previous studies showed a significant effect of cultural values on adoption and usage of mobile in social context. For example, Liu et al. (2011) examined how national culture values influence Mobile instant messaging adoption at individual level among Chinese. Xia (2012) found that cultural values were a significant predicting factor for the use of mobile texting for social interactions. Lee et al. (2013) investigated the impact of cultural differences on mobile phone adoption patterns. The present research adopted three critical cultural dimensions from Hofstede's cultural framework to investigate the impact of Arab cultural values on acceptance and use the mobile crowdsourcing in the crisis management. These are:

#### ***2.4.1 Collectivism/ Individualism***

The cultural dimensions distinguish between the members of collectivism cultures who are more likely to maintain closed and narrow in-group relationships than members of individualistic cultures (Triandis, 1989). Collectivism represents the extent to which people in a society prefer to live as a member of a tight-knit social group rather than live and work independently. In contrast to collectivist, online individualist cultures tend to be more trusting, direct, open, self-promoters, likely to directly address confrontations even with strangers (Dotan and Zaphiris, 2010; Marcus and Krishnamurthi, 2009; Yoo and Huang, 2011).

Many previous studies (e.g. Angeli, 2009; Dotan and Zaphiris, 2010; Marcus and Krishnamurthi, 2009; Rosen, Stefanone, and Lackaff, 2010) concluded that, whereas the collectivists tend to interact with fewer friends for longer periods of time, individualists tend to have larger networks of friends on SNSs. In this case, the society of collectivism culture will face a growing challenge to continue participating in online crowdsourcing as the crisis has taken much longer time than expected (i.e. Syria, Egypt, Libya, and Yemen). Furthermore, the members of collectivism cultures tend to be more ambiguous; less open, direct, and inclined to talk to strangers. Given that, those members are tend to be cautious about actively participating, self-disclosing, and expressing opinions and emotions honestly and transparently in the open online crowdsourcing with unknown and anonymous members. In such culture, the people from birth are integrated into strong, cohesive in groups, often extended families which continue protecting them in exchange for unquestioning loyalty. This kind of loyalty to the group may affect the advantage of crowdsourcing diversity, and lead to partiality which has a negative impact on crowdsourcing performance.

#### ***2.4.2 Masculinity/ Femininity***

Masculinity indicates to the distribution of roles between the genders, and to how much a society values the traditional man and woman roles. High masculinity scores are found in societies that identify tough values like assertiveness, heroism, and competition with the male role (Hofstede, 1991). It is support the self-concept, personal achievement, and self-prompting (Ali and Lee, 2010; Dotan and Zaphiris, 2010; Rosen et al., 2010). In contrast, femininity culture stands for a

society in which emotional gender roles overlap. Feminine cultures are more attracted to harmonious relationships with other individuals. Both men and women are supposed to be modest, tender, concern with the quality of life, show more empathy for others, spend time on relationships and personal ties, and maintain warm relationships. Yoo and Huang (2011) concluded that individuals of high masculinity countries tend to disclose more information and contribute to SNSs through lots of activities than femininity. Lewis and George (2008) and Furner and George (2009) mentioned that individuals with more espoused masculine values have a tendency to be more deceptive on SNSs than individuals with more espoused feminine values.

The Arab countries have been classified as high masculinity societies (Hofstede, 1980). Women in such societies are the weakest link, and this may explain why the Arab Spring chaos crisis incurred a high burden on Woman as a victim of these crises in many cases. Ironically, the women have participated, sometimes, more effectively than men in the events in more specifically in the post-stage of change revolutions. For example, in referendum on the new Egyptian constitution that has been held on January 2014, about 55% of the participants were females, compared with 45% of males. However, despite that SNSs have played a critical role in harvesting and accomplishing the Arab revolution, in general only about 36% of Arab Facebook members are female (Yassen and Al Omoush, 2013). Thus, it may be reasonable to conclude that, in such societies, at the time males are actively participating in the online crowdsourcing to manage their society's crisis, females are participating with much lower level in comparing with the considerable responsibility and hard role that women play offline.

#### ***2.4.3 Uncertainty Avoidance***

Uncertainty avoidance indicates to the degree to which the members of society feel threatened by uncertain, ambiguous, or unknown situations. Societies with high uncertainty avoidance tend to minimize the possibility of such situations by strict safety and security measures and the philosophical and religious beliefs in absolute truth. The avoidance cultures shun ambiguous situations and look for a structure in their relationships and more discreet in the expression of individuality (Hofstede, 1991; Marcus and Krishnamurthi, 2009). A number of researchers (e.g. Duronto, Nishida, and Nakayama, 2005; Posey et al., 2010; Veltri and Elgarah, 2009) described how individuals and groups manage the inevitable anxiety and uncertainty involved in meeting and interacting with strangers. Posey et al. (2010), Yoo and Huang (2011); and Veltri and Elgarah (2009) concluded that high level of uncertainty avoidance lead to avoidance of intercultural communications and self-disclosure. Marcus and Krishnamurthi (2009) noticed that the user's profile of high uncertainty avoidance societies use fake names, and consists of animals, toys, children, or even celebrities in place of her/his photo.

By its nature the crisis give rise to high uncertainty environment. According to Hofstede's (1980) typology, the Arab countries have been classified as high uncertainty avoidance societies. Furthermore, due to the nature of SNSs and Mobile technology as a new social and individual worldwide device for exchange formal and informal relations and sensitive information, the members of the crowdsourcing crisis management will always experience some level of risk



(Debatin et al., 2009; Ibrahim, 2008; Posey et al., 2010). In essence, by engaging in SNSs, they decide to deal with various degrees of uncertainty of the future and the free actions of others. In many crisis patterns in today's Arab spring, such as the Syrian crisis, the possibility of observing, mentoring, and following the active participants of Mobile crowdsourcing is another source of high uncertainty. All of the aforementioned issues impose extra challenges on Mobile crowdsourcing technology acceptance and use in the crisis management among Arab people.

### **3. Conclusions**

Recent years have seen an explosion of online social networking as a cyberspace to bring crowdsourcing into a mobile context. Furthermore, advanced social cloud computing and crowdsourcing technologies were utilized in the emergency management. Mobile social networking technology is a powerful platform for leveraging the crowdsourcing in large-scale events or in a crisis management. It provides opportunities for empowering collaborative social concerns. The explosive growth of using social networking in such historical events as the Arab spring uprising has provided an enabling platform for conducting mobile crowdsourcing in crisis management.

Despite the increased usage of mobile and Internet applications, recent studies indicated that Arab people are still reluctant to use and accept Internet applications technology for various reasons. Thus, the present research has extended the unified theory of acceptance and use of technology (UTAUT2) to study the major determinants of the behavioral intention to accept or adopt crowdsourcing technology in such a cultural environment on the Arab World. The proposed extended model incorporated five constructs, including performance expectancy, effort expectancy, subjective norms, hedonic motivation, and cultural values.

1. Atlee Tom and Rosa Zubizarreta. 2003. *The Tao of Democracy: Using co-intelligence to Create a World that Works For All*, The Co-Intelligence Institute.
2. Bagozzi R.P (2007) *The Legacy of the Technology Acceptance Model and a proposal for a paradigm shift*, *Journal of the Association for Information systems* Vol.8, Issue 7, article 7.
3. Brabham Daren C. 2009 *Crowdsourcing the Public Participation Process For Planning Projects*, *Planning Theory* 2009, 8:242 [http:// .Sagepub.com/content/8/3/242](http://.Sagepub.com/content/8/3/242).
4. Davis J.D., 1985. *Technology Acceptance for Empirically Testing: New End-User Information Systems Theory and Results*, Ph.D Thesis, Sloan School of Management, Massachusetts Institute of Technology.
5. Davis, F. D., R. P. Bagozzi, and P. R. warshaw 1989. *User Acceptance of Computer Technology: A Comparison of Two Theoretical Models*. *Management Science*, 35.
6. Geerts Simone A.M. (2009). *Discovering Crowdsourcing. Theory, Classification, and Directions for Use*, Endhoven.
7. Hofsted Geert, 1983. *The cultural Relativity of organizational Practices and Theories*, *Journal of International Business Studies*, vol.14 No.2.
8. Hong. S.J, Thong J.Y.L, and Tam, K.Y. (2006) *Understanding Continued Information Technology Usage Behavior: A Comparison of Three Models in the Context of Mobile Internet*, *Decision Supports Systems* (42:3).
9. **Howe Austin Wesley (2010). *Social Cloud Media and Crowdsourcing in Emergency Management: An Analytical Review of Exercise 24*, Master of Science Thesis, Sand Diego State University.**
10. Howe J. (2008). *Crowdsourcing: Why The Power of the Crowd is Driving the Future of Business*, Crown publishing Group, Random House .
11. Jenkins Henry (2006). *Convergence Culture : Where Old and New Media Collide*, New York University.
12. Lesser Eric, David Ransom, Rawn Shab and Bob Pulver, 2012. *Collective Intelligence: Capitalizing On the Crowd*. IBM Global Business Services.
13. Levy Pierre 2001. *Cyber Culture*, University of Minnesota.
14. Libert Barry and Jon Spector 2008 . *We are Smarter Than Me*, pearson, printice-Hall.
15. Liu Yefeng, Vili Lehdonvirta, Todrka Alexandrova, Ming liu and Tasuo Nakajima. 2011. *Engaging Social Media: Case Mobile Crowdsourcing, SOME*, 11 March 28, India.
16. Malone, Thomas W. 2008. *What is Collective Intelligence and What Will We Do About It?* /in/ *Collective Intelligence: Creating A Prosperous World At Peace*, edited by Mark Tovey , Earth intelligence Network, Oakton, Virginia.
17. Malone, Thomas W., Robert Laubacher, and Chrysanthos Dellarocas 2010. *Harnessing Crowds: Mapping the Genome of Collective Intelligence*, MIT Center of Collective Intelligence, Working Paper No. 2009-001.
18. McGonigal Jane 2008. *Why I Love Bees: A Case Study in Collective Intelligence*, [www. Melaniercean.com/interactivity](http://www.Melaniercean.com/interactivity) 2012/.
19. Riedl Christoph and Blohm Ivo 2010. *Rating Scales For Collective Intelligence in Innovation Communities: Why Quick and Easy Decision Making Does Not Get IT Right* , *The First International Conference on Information Systems*, St. Louis.
20. Sabri Hala (2011). *Beyond Arab Spring: Societal Contact and prospects for a New Paradigm of Arab Management*, *Journal of Social and Development Sciences*, Vol.2, No.5.

21. Surwiecki James (2004) . The wisdom of Crowds. New York: Randome House.
22. Venkatesh V, F. Davis, M. Morris 2007. Dead or Alive? The Development Trajectory and Future of Technology Adoption Research, Journal of the Association for Information Systems JAIS, Vol.8, Issue 4.
23. Venkatesh V., and Billol Bala, 2008. Technology Acceptance Models and Research Agenda on Interventions, Decision Sciences, Vl. 39, No.2.
24. Venkatesh, V, James Y.L. Thong, Xin Xu, 2012. Consumer Acceptance and Use of Information Technology: Extending the Unified Theory Of Acceptance and Use of Technology, MIS Quarterly, Vol. 36, No 1.
25. Venkatesh, V., M.G. Morris, G.G Davis and F.D Davis 2003. User Acceptance of Information Technology: Toward a Unified View, MIS Quarterly, 27, 3.
26. Vukovic Maja. 2009. Crowd Sourcing For Enterprises, 2009 Congress on Services, IBM, I.J. Watson Research.
27. Woolley, A.W., Chabris, C. F., Pentland., A., Hashmi, N., and Malone. 2010. Evidence For a Collective Intelligence Factor in the Performance of Human Groups, Science, 29 October
28. Yaseen. S., 2005. Application of Information Technology in the Arab World, Rayad: Saudi Arabia, Institute of the Public Administration.
29. Yaseen. S., 2008. Critique of the Arab Mind, Idafat, Arab Association of Sociology.