

Systematic Review of Information System Journals on the Use of Web 2.0 in Mass Emergencies

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Abstract

The study reviewed 32 literature from MIS Quarterly and European Journal of Information Systems on the use of web 2.0 in humanitarian emergencies. The exercise adopts Wolfswinkel, Furtmueller & Wilderom (2013); Webster & Watson, (2002) approach to systematic review where methods, themes, authors and the use of tools were studied, analysed and synthesized. The insight gained from the study reveals the availability of interoperability framework in EU and USA. Others are paucity of authors from the developing world, gaps in the use of ICT tools in the humanitarian situations as well as the overwhelming use of quantitative approach across the two journals. Findings from the review will help in identifying gaps and crafting research question.

Keywords: ICT, Humanitarian Emergencies, Systematic Review, MIS Quarterly, European Journal of Information Systems

1. Introduction

From USA to Australia, China to Japan, Haiti to Philippines, Kenya to Guinea, Liberia to Sierra Leone to Nigeria and lately Nepal the story is the same. Humankind had suffered from misfortune that comes in size, shapes and forms. This misfortune could be natural, other times manmade and in some circumstances the combination of both. From 2005 to date, disasters such as earthquake, flood, armed conflicts, disease outbreak and wildfires caused the loss of human lives and rendered countless victims homeless. In USA alone, hurricane Katrina, Rita and super storm sandy, destroyed over 440000 square miles impacting at least 24 states and affecting over 9 million people (Chou, Zahedi and Zhao, 2014).

It is within the growing concern of IS community (Call for Paper 2013) on the role of ICT in complex social problems, this review is undertaken to help in identifying research gap.

Against this backdrop, the following research questions is drawn with the view that it will help in guiding the review:

- (a) What form of ICT tools are mostly used by humanitarian agencies and why and how are they using them and in what ways are they aiding rapid response capacity and preparedness during emergency situations?
- (b) Do humanitarian organizations have policy frameworks on information sharing and interoperability and in what ways do they facilitate decision-making as well as a response, coordination and collaboration between first responders, stakeholders and the victims?

The previous questions will help in refining the scope of this study (Wolfswinkel, Furtmueller and Wilderom, 2013) and can also be taken on the following detailed aspects:

In what ways are these tools and frameworks similar to or different from the ones used in developed countries?

How are these tools aiding humanitarian workers, volunteers and victims during an emergency situation?

This paper is organised as follows: first it deals with steps for searching and identifying literature; second, the researcher analyses methods featured in both MIS Quarterly (MISQ) and European Journal of Information Systems (EJIS) literature; third, it features thematic review followed by general observations and discussions, and finally, the researcher summarises the insight derived from reviewing MISQ and EJIS articles.

2.0 Identification of Relevant Literature

In order to have a sound and well-expounded review with a firm foundation for advancing knowledge (Webster and Watson, 2002), this study adopts to use scholarly peer-reviewed journals. For the purpose of this exercise, the emphasis is on two top IS journals namely MISQ and EJIS.

Adopting Wolfswinkel, Furtmueller & Wilderom (2013) approach to the literature review, this study restricts itself to the use of electronic journals. The reviewer uses Business Source Premier and Palgrave McMillan databases for MISQ and EJIS respectively. The decision to limit the use of these online databases is premised on the repositories extensive collection coverage. The former have collections dated back to 1st March 1977 to date while the later has collection as per back as 1991. Then again, the reviewer adds two criteria for excluding articles from the two journals. The exclusion includes any journal article that is in a language other than English and search output that is incapable of retrieving the full article.

For this study, the following keywords are used: 'ICT', 'Twitter', 'OpenStreetMap', 'Facebook', 'YouTube', and 'Instagram'. Next, the reviewer encloses quotation marks on 'social media', 'web 2.0', 'online social networks', 'digital media', and 'social network'. The enclosure is to enable the search engine to look for the

exact phrase.

In the same way, the reviewer uses search parameter such as ‘all text’, ‘author’, ‘title’, ‘subject’, ‘abstract/author-supplied abstract’, ‘Author-supplied keywords’, and ‘optional’ in order to compare different output. For instance, searching for “social media” in Business Source Premier, using ‘all text’ parameter will produce 67 results while searching using ‘title’ parameter will give only five (5) outputs. The wisdom of trying all options is to allow the reviewer to make an informed judgment on which result aptly gives precise and reasonable output.

2.1 Refining the search result

MIS Quarterly was the first journal examined by the reviewer. The search yielded 61 results. For that reason, the reviewer skim read the abstract and thereby dropped 36 articles. Then again, the reviewer skim read the introduction, some part of the analysis/discussions as well as a conclusion to determine whether they are within the scope or not. The result of such exercises yielded in excluding additional seven (7) papers. Next, the reviewer examined the full texts of the 18 remaining articles for final inclusion. After a thorough reading, two (2) other papers were further excluded which make 16 articles qualified for inclusion in the MISQ category.

Likewise, the same approach was used in searching articles for EJIS. The first round yielded 36 result. Then again, the second round of skim reading the abstract returns 25 journal articles. Additional skim reading of introduction, some part of the analysis/discussions and conclusion helps in disqualifying three (3) papers. Also, reading the full text of the remaining 22 articles made the reviewer exclude six (six) additional journal papers as shown in figure 1.

The Summary of the search and screening process is shown in figure 1 below

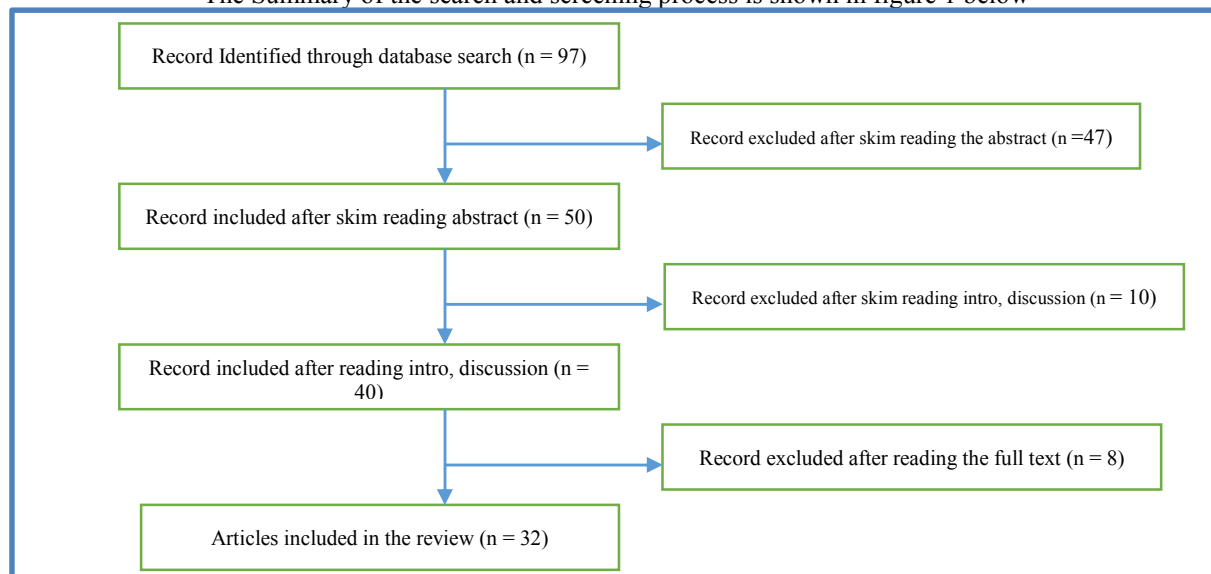


Figure 1: Flowchart of the search process

3.0 Methodological Review

In terms of methodology, the review studied approaches taken by individual authors. The essence is to categorise the approach into qualitative (laboratory experiments, formal methods, and numerical methods), quantitative (observation and participant observation (fieldwork), interviews and questionnaires, documents and texts, and the researcher’s impressions and reactions) and mixed method (combination of qualitative and quantitative approach) (Myers, 1997) as shown in figure 2 below.

On that note, Quantitative research methods occupy 56.25% (n=9) in MIS Quarterly. Next to it is Mixed – Method approach with 25% (n=4) which is slightly followed by a Qualitative method with 18.75% (n=3).

In contrast to MISQ, Qualitative method occupies 50% (n=8) in EJIS. Then again followed by a Qualitative method with 43.75% (n=7) and the least is Mixed – Method approach with 6.25% (n = 1).

Combining the two journals according to the methods employed by individual authors, Quantitative technique scores the highest points with 50% (n=16). Second to it is Qualitative with 34.375% (n = 11) then followed by Mixed – Method with 15.625% (n=5).

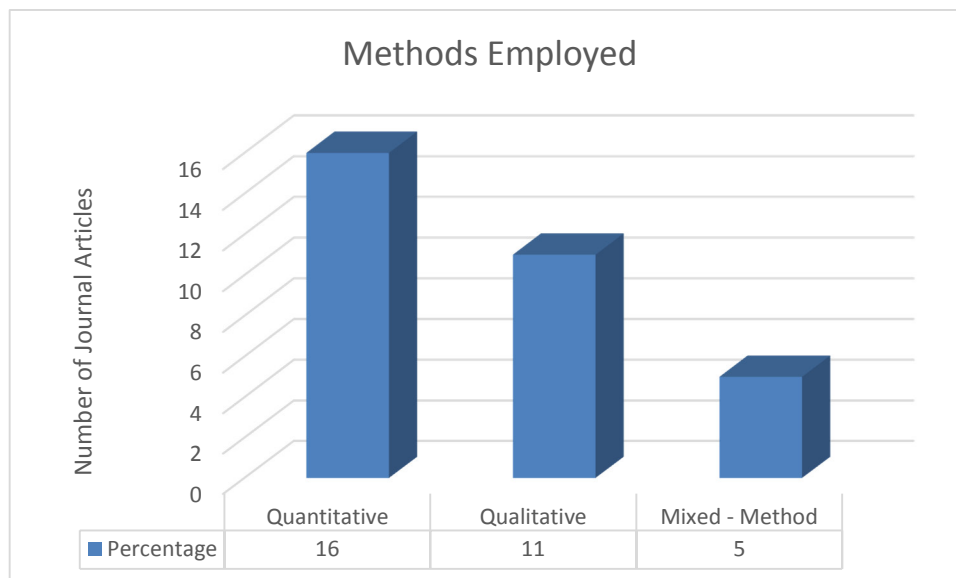


Figure 2: Methods used in both MISQ and EJIS

4.0 Thematic Review

In this section, a review of the entire articles is presented based on recognisable pattern and affinity. The section is divided into four segments as follows: the first section deals with disaster management, information sharing and interoperability; next is web 2.0 followed by mobile technologies and information systems sections.

4.1 Disaster Management, Information sharing and interoperability

Four (n=4) articles are representing 12.5% (n=32) of the entire articles clustered around the genre of disaster management, information sharing and interoperability. Two of these articles centred specifically on how emergency responders share and communicate information. The remainder deals with the evaluation of natural disaster management website preparedness and how organisations identity shapes organisational ICT.

On information sharing and interoperability, Chen et al. (2013) examined emergency data interoperability in response to fire-related extreme events for emergency response. Their findings revealed that lack of consistent data standards for emergency management practice hinders efficient critical information flow among incident responders. Using third-generation activity theory-guided approach, they developed a data model that reduces information interoperability barriers and can be applicable in the response to fire-related extreme events. Equally important, Allen & Norman (2014), examined how emergency responders communicate and share information and how also organisational rules and norms influence information sharing and interoperability. Their findings identified different information sharing challenges such as operating in insular manner and fragmentation of shared objectives. Others are undertaking of discrete processes or activities by services, which often did not require resource or involvement from the other services. Allen & Norman found that interoperability has several information-sharing challenges that transcend technology issues. As such it should better be managed as an organisational, and informational problem intrinsically linked to norms and values. They further argued that a change of this nature and scale requires procedural and strategic, operational and behavioural changes at the policy and agency level as well a paradigm shift for system design.

On the other hand, Chou, Zahedi & Zhao (2014), evaluates natural disaster management (NDM) websites using ontology-based approach to identifying their strengths and weaknesses. Their findings revealed specific flaws of natural disaster management websites across USA and went on to provide diagnostic and auditing tools that can be used world over to recognise critical weaknesses in the NDM websites. That aside, Tyworth, M., (2014), examined how organizational identity shapes organizational ICT. His finding revealed “organizational identity shapes an organization’s ICT-related processes and is reflected in the material configurations of an organization’s ICT, and that organizations with different identities exhibit those differences in their ICT”.

From the above, a conclusion can be reached that MISQ and EJIS literature document research in the field of disaster management from the information sharing and interoperability perspective. However, such documentation shall be a premise in the context in which the research scope is undertaken. For instance, both Chen & et al. (2013) and Allen & Norman (2014) studies delimited their scope in information sharing and interoperability from fire incidence perspective. As such other emergency situations such as earthquake, flood, disease outbreak and terrorist attack information sharing approach might require additional construct. Not only that, again, Allen et al. study covers only activities at initial response phase leaving recovery and management and

various disaster phases. While, Chen et al. data model is delimited to core response operations in a fire incident response leaving out other essential data elements that are supportive of the fire response and response performance metrics.

Another noticeable issue from both Allen and Chen studies is in their context (USA and UK). Both UK and USA are countries with functional systems and infrastructures. Therefore, the possibility of implementing their approach in countries where there is systemic decay in infrastructure is certainly going to be problematic. Hence, the need for interrogating the information sharing and interoperability aspect from such context mired with complex interoperability dimensions (organisational, legal, semantic, technical, cultural, political and religious). Taking Chen model development approach as an example where the input for the study heavily relies on the knowledge of the emergency response personnel of Western New York. One would certainly be circumspect in generalising the use of the model in other regions even within the USA. As such by implication, the design may not be a fit for all solution when subjected to a different climate, culture, region or continent.

4.2 Web 2.0

From both MISQ and EJIS, web 2.0 genres account for 71.88% (n=23) of the entire literature retrieved for the review. The research on the use of ICT under this category falls within the spectrum of social media, eBusiness and others (a grouping without any recognisable pattern).

4.2.1 Social Media

Under this subcategory, studies undertaken deals with three classification of social media such as social network, blogs and microblogs as well as collaborative projects:

On social network, Light (2007) studied men's internet dating site (Gaydar) to explore how technologies used in that website shape and, are shaped by, gay men and their diverse masculinities. The finding revealed that: "the use of internet dating by gay men involves navigating, shaping and being shaped by a set of sociotechnical arrangements that are infused with diverse interpretations of what it means to be masculine in the gay community, on-line and off-line". Next, Turel & Serenko (2012), examined the duality of online social networks in terms of its benefits and dangers. Their findings reveal that even though it can increase users' engagement with the system, the more enjoyment is not always better, and this engagement can lead to the development of a 'bad' IS habit. Furthermore, it can lead to the development of higher levels of technology addiction. Another study undertaken by Koch, Gonzalez & Leidner (2012), examined how organizations use internal social networking sites (SNSs) and how their employees respond emotionally to these systems. They found that "SNSs blur the boundary between work life and social life and that this boundary-blurring creates positive emotions for the employees that use the system. These emotions create personal resources, which then have organizational impacts. While some of the non-users of the system, the IT middle managers, experienced isolation, frustration and resentment. Also, the executives overseeing this SNS attribute improved morale, better employee engagement and even reduced employee turnover to the internal SNS". On issues related to privacy, Chen & Sharma (2015), studied the impact of Facebook users attitude on member self-disclosure. Through the learning theories lens, they found that "extroversion, perceived networking assistance, perceived cyber risk, and social influence jointly influence user attitude formation by affecting classical conditioning, operant conditioning, and social learning processes". Other important study conducted by Matook, Brown & Rolf (2015), examined factors that influence a user's intention to act on an online social network (OSN) recommendation. Their findings after surveying 116 OSN users revealed 'experience of recommendation', 'closeness' and 'excessive posting behaviour' have positive impact on trust and intention to act on the recommendation while 'similarity' lacks such.

To sum up, literature under this genre examined how technologies used in Gaydar website shape and, are shaped by, gay men and their diverse masculinities. Others are benefits and risk of social networking sites and how organizations use internal social networking sites (SNSs) and how their employees respond emotionally to these systems. Other studies examined the impact of Facebook users' attitude on member self-disclosure and factors that influence a user's intention to act on an online social network recommendation.

4.2.2 Blogs and Microblogs

Under this sub-category, blogs and microblogs impacts on information processing and decision-making process were examined. For instance, Oh, Agrawal, & Rao (2013), studied citizen-driven information processing through Twitter services using data from the Mumbai terrorist attacks in India. Others are Toyota recall and the Seattle café shooting incident in the USA respectively. Their findings revealed "information with no apparent source provided was the most important, personal involvement next in importance, and anxiety the least yet still significant rumor causing factor on Twitter under social crisis situations". Likewise, Shi, Rui & Whinston (2014), examined the decision-making process of content sharing in a social broadcasting environment using twitter at the individual level. Their finding revealed that weak ties in the form of unidirectional links are more likely to engage in the social exchange process of content sharing. On the other hand, Chau & Xu (2012) examined the challenges of generating business intelligence in blogs. To overcome the challenges, they developed and tested generic framework using two case studies, a system that can crawl blogs contents and bloggers interaction network.

4.2.3 Collaborative Projects

Literature under this category examined innovation and information aggregation. For instance, Gray, Parise & Iyer (2011), explored two different perspectives on how accessing others' bookmarks could enhance how innovative an individual is at work. Using the lens of structural holes theory, their findings in analysing bookmarking system use indicate the following: strong backing for the social diversity of information sources as a predictor of employee innovativeness, but no support that the number of bookmarks accessed matters. Another study undertaken by Xin & Xiaoquan (2013), examined the value of Wikipedia for aggregating firm information in the modern financial market. They found that it (Wikipedia) enhanced and accentuate the information environment and the value of information gathering through the use of information technology.

4.2.4 Others

Literature under this subcategory come in varieties such as knowledge management, crowdsourcing, politics and privacy studies.

To start with, Kanawattanachai & Yoo (2007), examined the impact of knowledge coordination on a virtual team performance over time. They found the necessity for organisations to stress the need for task-oriented communication when establishing a virtual team. Similarly, Thomas & Bostrom (2010), studied how team leaders using virtual teams can sense the need for technology adaptation intervention. To do that, they developed the five trigger model. The model provides valuable insight pertaining to diagnostic tool assessing real-time multi-trigger team technology adaptation contexts. It also provides a better understanding of the relationship between the technology structure strength indicators in adaptive structuration theory and the need for team technology adaptation intervention. Likewise, Young, Kuo & Myers (2012), studied the usage and development of web 2.0 knowledge management system in Taiwan. They found that, even though, the system is primarily meant to enable sharing, the capabilities for shadowing users' activities in it strictly limited sharing.

Under this subcategory, Chan & Ghose (2014) studied the Impact of Craigslist to determine whether it presence increases the prevalence of HIV transmission. They found that, Craigslist is linked to increasing HIV transmission with nonmarket-related casual sex as the major push for the increase in HIV cases in comparison to paid transactions solicited on the site. The finding, however, revealed that the website can provide resourceful information to practitioners for monitoring and reduction of HIV cases as well as the formulation of policies on governance over website content. Looking from another dimension, Orlikowski & Scott (2015), examined contemporary technological developments involving algorithmic transformations of crowd-sourced data in the service industry. Their findings revealed that in the hospitality sector "the online rating and ranking, as performed through the materiality of algorithms and crowds, is entangled with a significant reconfiguration of interests and relations between hoteliers and travellers".

In terms of politics and privacy concern, Wattal et al. (2010) examined how politicians during 2008 US presidential primaries leveraged web 2.0 to sell their candidacy. They found that web 2.0 was a useful and veritable platform for connecting with electorates and winning their hearts in an inexpensive way. While, Dinev et al. (2013), examined conceptualization of privacy and the correlates that hitherto have been linked to or confused with privacy. They found that anonymity, secrecy, and confidentiality are tactics of information control and affect the users perceived information control, which, along with perceived risk, directly affect the perceived privacy. The findings also revealed that perceived risk can be decreased by perceived benefits from information disclosure. It can also substantially increased the sensitivity of the disclosed information, the regulatory expectations the users have, and the importance of information transparency.

From the previous review, one will comfortably pinpoint potentials of web 2.0 technologies in the arena of knowledge management, crowdsourcing, information processing and decision-making as well as innovation. What, however, is not visible is how these potentials can be translated and cascaded into use in the context of humanitarian emergencies.

4.3 Mobile Technologies

Under this subcategory research undertaken by Ferneley & Light (2006), examined the potential effects of emerging mobile technologies on end-user relations with a focus on the secondary user. Their findings suggest that secondary users, as an underrepresented group in information systems projects. The study also underscores benefits of deploying the technologies – the traffic flow application assisted collaboration among emergency services personnel for example. While Dery, Kolb & McCormick (2014), examined how smartphone use is evolving in practice in organisations in terms of behaviours and attitudes. They found that users seek to manage connectivity across work and non-work spaces. For many users who exercise choice (agency), switching between work and non-work interactions to regulate the connective flow across multiple connective media or disconnecting from work is no longer possible, nor desirable.

The takeaway from the previous is while the MISQ is silent on the use of mobile technologies, EJIS literature documented research on the potential effects of emerging mobile technologies. It also showcases how smartphone use is evolving in practice in organisations in terms of behaviours and attitudes. However, literature

is not available enough to showcase the potentials of mobile technologies as tools for use in humanitarian emergency situations.

4.4 Information Systems

Information system issues are pertaining to the remote use of technologies, ICT project trajectories and implementation, as well as ICT delivery, are the central theme in this regard.

Studies undertaken by Greenhill & Wilson (2006), examined how Marx-inspired approaches concerning gender are applied to the at-home telework phenomenon. The study found that Marxist approach to women's twin roles as paid employees outside the home and as unpaid domestic workers in the home is paramount in the consideration of achieving an egalitarian home-life balance. However, arguments about the work-life balance will be shaped by the perceived benefits to the employer, rather than issues of social justice. In another dimension, Murunga & Merali (2014), examined the way in which ICT project trajectory is influenced by its broader political and socio-economic environment from the developing world perspective. The finding reveals “analytical and explanatory capacity afforded by Archer’s morphogenetic approach (MA) is well suited to addressing ICT4D environments characterized by dynamic political, socio-economic, and technological contingencies”.

On the other hand, Srivastava & Shainesh (2015), studied how interactional resources can be orchestrated across the provider and user service systems to create service innovations aimed at bridging the service divide. Their studies also examined the key enablers that facilitate delivery of ICT-enabled service innovations to bridge the service divide in the context of developing countries. Their findings revealed two value propositions. These propositions are: service innovations in developing countries should offer improving geographical access and reducing delivery cost. Also digitally enabled service innovations are the result of recombining the interactional resources of knowledge, technology, and institutions so that technology should not be considered in a vacuum when designing innovative applications. Then again, the finding identifies obsessive customer empathy, belief in the transformational power of ICT, continuous recursive learning, and efficient network orchestration as key enablers for successfully implementing ICT-enabled service innovations.

To sum up, the key takeaway from the studies above is a pointer to the fact that IS project in the developing world hinges on “dynamic political, socio-economic, and technological contingencies”. Furthermore, for service innovation to be successful, it must improve access and subsidise the delivery cost.

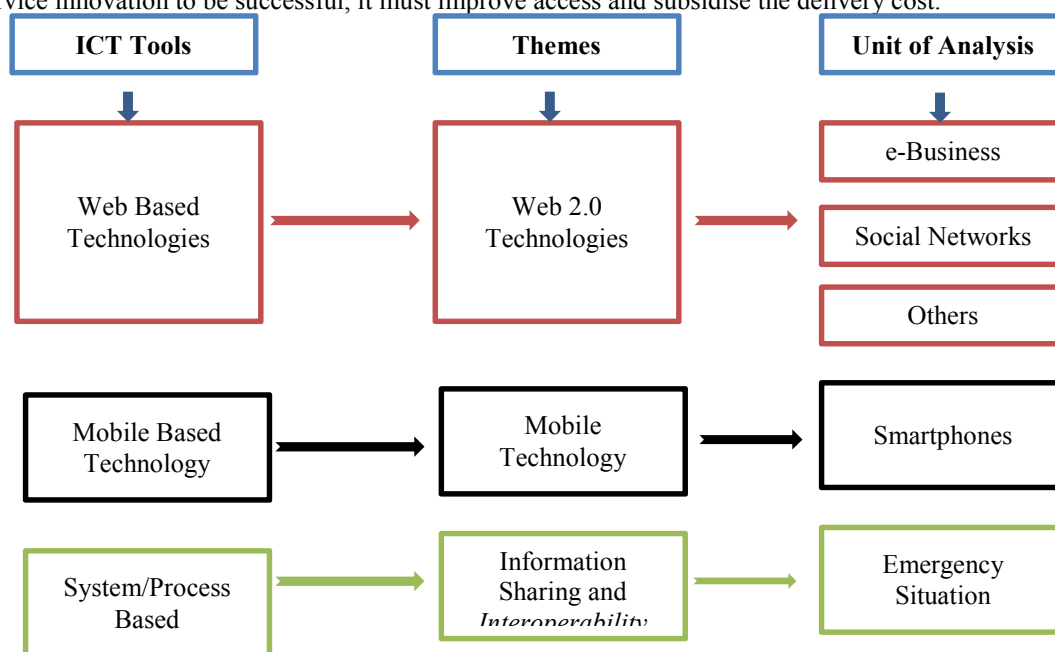


Figure 3: Conceptual schema of MISQ and EJIS literature on the use of ICTS

5.0 General observations, discussions and findings

Based on the extensive reading of the 32 articles from the two (2) journals (MISQ and EJIS) reviewed; the following observations are drawn.

5.1 Use of ICT tools in the MIS and EJIS literature

In order to have an idea of the use of ICTs in the research, a summary table is presented in Table 1 below.

S/N	AUTHORS	TECHNOLOGY	APPLICATION AREA	CONTEXT
1	(Lau et al., 2012)	Web 2.0 (Chinese Companies cross-border Mergers & Acquisitions websites)	Business (Mergers & Acquisitions)	Business Intelligence
2	(Chou, Zahedi and Zhao, 2014)	Web 2.0 (US Natural Disaster Management Website)	Ontology Evaluation	Natural Disaster Management
3	(Chan and Ghose, 2014a)	Web 2.0 (Craigslis Website)	HIV AIDs cases	Health Management and Surveillance
4	(Allen and Wu, 2010)	Web 2.0 (eCommerce website)	Price Comparison	Online Market (eBusiness)
5	(Erat et al., 2006)	Web 2.0 (mednetwork.org website)	Knowledge Exchange	Business Customer Community
6	(Rafaeli and Noy, 2002)	Web 2.0 (Dutch auction applet)	Online Auction	Social Facilitation
7	(Sigala, 2012)	Web 2.0 (Yahoo Trip Planner)	Trip Planning	Tourism, Psychology (understanding behaviour)
8	(Wattal et al., 2010)	Youtube	Campaign	Politics
9	(Dinev et al., 2013; Chau and Xu, 2012; Wattal et al., 2010)	Blogs	Campaign, Consumer Interaction, Information Privacy	Politics Business Intelligence Privacy
10	(Wattal et al., 2010)	Myspace	Campaign	Politics
11	(Chen and Sharma, 2015; Matook, Brown and Rolf, 2015; Dinev et al., 2013; Wattal et al., 2010)	Facebook	Campaign, Attitude formation, Recommendation	Politics, Self-disclosure, Privacy, Improve theoretical insight on recommendation
12	(Wattal et al., 2010)	Web 2.0 (Meetup website)	Campaign	Politics
13	(Shi, Rui and Whinston, 2014; Oh, Agrawal and Rao, 2013)	Twitter	Information Quality, Social broadcasting	Social crises situation, decision making
14	(Dinev et al., 2013; Gray, Parise and Iyer, 2011)	Del.icio.us	Innovation impact, information privacy	Social bookmarking, Knowledge Management
15	(Xin Xu and Xiaoquan (Michael) Zhang, 2013)	Wikipedia	Information aggregation	Financial Market
16	(Dery, Kolb and MacCormick, 2014; Ferneley and Light, 2006)	Smartphones	Financial services, Fire and Rescue services	Usage and behaviour change of users, Fire and rescue service
17	(Dinev et al., 2013)	Flickr	Information Privacy	Privacy related
18	(Dinev et al., 2013)	Digg	Information Privacy	Privacy related
19	(Koch, Gonzalez and Leidner, 2012)	Internal social network	Financial organisations	Implementation of internal social network
20	(Light, 2007)	Gaydar (Gay men social network)	Technology used	Masculinity studies
21	(Matook, Brown and Rolf, 2015)	Studioz.net (German Website)	Recommendation	Improved theoretical insight

Table 1: Use of ICT tools from MISQ and EJIS Journals

From the table above, only two (2) studies (see number 2 and 16) can be said to be relevant in the context of the use of ICTs in humanitarian emergencies. On taking a deeper look at the two (2) studies, one will find the former evaluates natural disaster management website using ontology-based approach (Chou, 2014). The later uses smartphones to model traffic flow and the use of GPS for directional purposes in a fire and rescue related events (Ferneley 2016).

Consequently, a careful analysis of the table above will reveal that out of the 21 different ICT tools, at least 11 of them can be leverage in emergency situations. This usage can be informed of ‘mitigation’, ‘preparation’, ‘at- the incidence scene’ or for ‘recovery’.

The YouTube and Blogs utilised during the president primaries in the USA can also be extended to mobilisation, public education, Vox populi and collective web intelligence in the event of emergency situations. Facebook, Myspace, Gaydar and Meetup can be leverage in finding missing people, donation, volunteerism, and safety check and information dissemination. Twitter can also be utilise in crowdsourcing donation, detecting

developing news and trends, dousing tensions and information dissemination. Mobiles phones can be use for making calls, locations, GPS direction and emergency calls. Lastly, Flickr and Del.icio.us can be leverage for location-based information and knowledge management in emergency situations.

To sum it up, it can be said that going by the two journals under study, a potential gap exists in the use of ICT for the humanitarian emergencies.

5.2 Interoperability and Information Sharing Framework

On information sharing and interoperability, the literature reviewed established the availability of interoperability framework for both EU (European Interoperability Framework EIF) and US (National Information Exchange Data Model NIEM). However, the literature is silent on the availability of other regional or national framework for developing countries. As such, one can safely assume that based on MISQ and EJIS review, a potential research question exist. Hence, in order to shape our quest for finding gaps in the upcoming review, we can add the following question as a possible research question:

Research Question: Do the developing world have standardised and seamless framework on interoperability that expedite secure and real-time information sharing between emergency organisations?

5.3 Research case study context

25 out of the 32 articles reviewed on the general use of ICTs has examined either a country, a company, a product or website as a case study. A careful analysis of the case study context indicates that: USA has the highest number of appearance (n=14), followed by UK (4) and India (2). Other countries with only one appearance (n=1) are Canada, China, Kenya, Netherland and Taiwan. In terms of the developed and developing world perspective, one can see that developed countries accounted for the 80% (n=20). On the other hand, for research on the general use of ICTs from the developing world (Asia and Africa combined) accounted for the remaining 20% (n=5).

To sum up, one can also see potentials in humanitarian emergency research and the use of ICTS in different countries. Countries like Nepal, Haiti, Liberia, Sierra Leone, Nigeria, Niger and other nations ravaged by earthquake, insurgencies, flood or Ebola.

5.4 MISQ & EJIS Authors

From both MIS and EJIS, the reviewer gathered that 80 academics co-author 32 papers with MISQ having 42 and EJIS 38. The reviewer then again mapped the name of the authors' universities with the country in which the universities are. The result shows 37 authors are from USA, 14 from UK, seven (7) from China and three (3) from Germany and Australia. Other countries like South Korea, Canada, New Zealand, Israel and Taiwan has two (2) authors while France, India, Kenya, Thailand, Switzerland and Greece has one (1) authors each.

Insights derived from the above analysis clearly shows paucity in literature from Africa in general and West Africa in particular from the most highly rated and regarded IS Journals.

5.5 Use of theories in MISQ and EJIS literature

On the use of theories from the two Journals, it can said that the majority of the articles reviewed are well grounded in the use of the theories. Going into specifics, only 2 (Chan and Ghose, 2014; Wattal et al., 2010) articles in MISQ lack theoretical grounding. On the other hand, EJIS use of theories can comparatively be said to be lower than that of MISQ. In EJIS, at least seven articles lack theoretical underpinning.

Two important takeaways from analysing theories are:

- (a) Activity theory appears twice from literature in both MISQ (Chen et al., 2013) and EJIS (Allen, Karanasios and Norman, 2014) that deals with emergency related situations
- (b) EJIS literatures that use qualitative approach to study important issues pertaining to knowledge sharing (Erat et al., 2006), fire service incidence (Ferney and Light, 2006), telework (Greenhill and Wilson, 2006) and masculinity studies in information system research (Light, 2007) lacks theoretical grounding to back their findings

5.6 Paucity of critical research from MISQ and EJIS literature

From the 32 studies examined, only one study was able to provide insights on the other side of the use of ICT tools (Chan and Ghose, 2014) in terms of its potentials and concern. Issues related to privacy, digital divide and third party (developer/provider) interest. Others are governmental interest in terms of business for the former and 'security' or 'national interest' (justified or unjustified) for the later are somewhat nearly absent. In essence, the literature is virtually silent on what web 2.0 can do and what it cannot. However, such concern is addressed in some particular context outside the sphere of MISQ and EJIS (McGrath et al., 2012).

5.7 Some noticeable trends in the literature

Another insight gained from the review include

- a) The appearance of literature in MISQ with a special interest in the developing countries such as India

(Srivastava and Shainesh, 2015) and Kenya (Muranga Njihia and Merali, 2013). However, careful and deep scrutiny of the authors and the universities will reveal the following:

Authorship Ranking	Name	University	Country
1	Shirish C. Srivastava	HEC Paris	France
2	G. Shainesh	IIM Banglore	India
1	James Muranga Njihia	University of Nairobi	Kenya
2	Yasmin Merali	The University of Warwick	UK

b) From 2012 – 2014 MISQ literature clustered on collective intelligence

c) From 2012 – 2014 EJIS literature clustered on e-Business related topics

6.0 Limitations

Upon all the insight generated from the review, it shall be understood within the premise that it is delimited to MISQ and EJIS. Therefore, the subsequent inclusion of other Journals may likely change the dynamics of the insight provided.

7.0 Conclusion

To sum it up, the study reviewed 32 literatures from MISQ and EJIS on the use of ICTS on humanitarian emergencies. The exercise adopts Wolfswinkel, Furtmueller & Wilderom (2013); Webster & Watson, (2002) approach to systematic review where methods, themes, authors and the use of tools were studied, analysed and synthesized. The insight gained from the study reveals the availability of interoperability framework in EU and USA. Others are Paucity of authors from the developing world, gaps in the use of ICTS in the humanitarian situations as well as the overwhelming use of quantitative approach across the two journals. Findings from the review will help in identifying gaps and crafting research question.

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