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**THE ONLINE EVOLUTION OF SOCIAL MEDIA: AN EXTENSIVE  
EXPLORATION OF A TECHNOLOGICAL PHENOMENON AND ITS  
EXTENDED USE IN VARIOUS ACTIVITIES**

By

Janice F.Y. Penni

A THESIS SUBMITTED IN PARTIAL FULFILLMENT OF  
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## **Abstract**

The rise and popularity of Social media technologies has created an interactive and communicative global phenomenon that has enabled billions of users to connect to other individuals to not just Facebook, Twitter and LinkedIn; but also with media sharing platforms such as Instagram and Pinterest.

The aim of the research is to provide an overview of the evolution of online social media in order to contribute to current literature for a better understanding of this technological phenomenon. In this context, the study examine questions that help define social media and Web 2.0 applications, the functionalities, characteristics, usage, classifications, the history and development and challenges surrounding social media technologies as well as the value and impact in e-government services.

Based on a number of nationwide surveys of more than 2000 American citizens, the study explored several characteristics of social media use. The results of the quantitative analysis show that there are considerable differences in the communication activities on popular social media platforms such as Facebook, Twitter, Google+, Pinterest, LinkedIn, YouTube and Instagram which includes the extent, purpose and classification of social media usage as well as social media users general attitudes towards the technologies. The results present the differences in the demographic groups particularly in terms of gender, age, education and income and the factors that determine the use of social media platforms.

The findings revealed that there is a strong relationship between age and gender and social media technologies and that the variables have a significant impact on how social media is used for social purposes. Age and gender was also strong predictors of social media use and the future usage of the tools. The results also showed that women, the younger generation, college graduates and those with higher incomes were dominant users of social media. The findings also indicated that media sharing platforms are becoming popular, for example, respondents who used YouTube are also more likely to use Instagram, due to the rise of video and photo tools dominating social activities. Future implications of social media technologies for social networking activities are also discussed.

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# **Chapter 1: Main Body**

## **1.1 Introduction**

This study provides a focal point on the development of social media technologies from web 1.0, 2.0 and the future trends towards Web 3.0 and Web 4.0 in order to maximize the potential payoff of social media technologies. The study also explores the use and phenomenon of social media and providing a complete overview of the most relevant information for a better understanding of the technologies. Therefore the sub areas that will be covered are: what are social media technologies and what are they used for? who uses them and for what purposes? the development of social media, the functionalities that allow users to take advantages of the features, the characteristics, usage and the classification of social media, the impact and significance for e-government and the challenges and limitations of social media and in the context of e-government.

The World Wide Web has had a significant impact on the way individuals communicate, interact and connect with each other. The Internet has become a ubiquitous part of people's lives and the development of social media from Web 1.0 to Web 3.0 has transformed how users access information, communicate and interact with other users and share and search for specific information.

Social media refers to a set of online tools that are purposely built and dedicated to social interactions and supports communications for web based technologies such as social networks (e.g. Facebook, LinkedIn, Google+), blogs, microblogs (e.g. Twitter), social sharing services (e.g. YouTube, Flickr, Instagram, Pinterest), text messaging, discussion forums, collaborative editing tools (e.g. wikis) and virtual worlds (e.g. Second Life) (Fuduric and Mandelli, 2013).

These tools are different in functionality and features for their purposes but they share a common goal allowing users to communicate, interact, edit, and share content in social surroundings. However, social media relies on user generated content, which applies to any content that has been created by end users or the general public, unlike traditional media which has content generated by professionals. Social media is designed for two way communication mainly as a

dialogue for many-to-many interaction unlike traditional media which is solely one-to-many as a broadcast platform. The many-to-many interaction enables larger groups of users on a wide geographical level to produce valuable information instantly whilst gaining a diverse insight into various categories of information and sharing their perspectives through discussion i.e. comments, blogs etc.

Although the term social media is comparatively new, the technology has been with us for decades starting with email lists, Usenet, Bulletin boards and chat rooms. These early forms of social media showed that surprisingly rich social worlds can be launched through other resources of tools such as text based conversations with strangers (Kaplan and Haenlein, 2010). Through the timeline of social media, new social channels have emerged, each with their own functionality that forms the type of interaction occurring with users. The services within the technologies differ in their scope, the type of content being shared (e.g. videos, images, text) and the pace of the interaction, who controls the data and the type of connections between the users and items (Hansen et al., 2011; Zhou et al., 2011). Today social media technologies are regularly employed by a large number of internet users and many government organizations are now focused on it, with the technology becoming a central element in e-government services. Federal governments are already using blogs, wikis, micro-blogs, social networking sites and, to an extent, virtual worlds to communicate with the public and between agencies to disseminate information (Bertot, Jaeger and Hansen, 2011; Chun & Luna-Reyes, 2012).

E-government is a new concept that influences and is influenced by numerous factors in society and the broad usage of social media sites allows governments to rethink carefully on how they can benefit the usage especially to interact with both citizens and public authorities. This is significant in terms of social networking sites which are heavily utilized by people and therefore governments' utilization of such tools can increase participation and engagement with their citizens.

Social media, such as blogs, wikis, websites and other social networking sites like Facebook, Twitter and Google+, enables government organizations to re-establish the relationship with their citizens and enhance the level of their engagement and participation.

This study will explore the extended use of social media in various activities and present an overview of why they are used, who is and who is not using social media sites, and for what reasons, and understanding of the long term implications of social media sites, the important issues surrounding social networking sites, the key changes and development of social media. It will also explore how governments can enrich their presence on social media and how these technologies can help them adopt new ways of interaction with individuals; whilst gaining a better understanding of their citizens' perceptions and opinions on many issues.

From the outlined aims for the study, numerous research questions and concerns have risen and further refined for a focal point of study. This research therefore, aims to answer the following questions regarding the impact of social media of all daily activities.

1. What are social media technologies and what are the functionalities, usage and essential characteristics of online social media?
2. How widespread are Web 2.0 and social media technologies in various activities and is it possible to perceive social media importance?
3. How did social media emerge and develop over time?
4. What is the classification of social media technologies and social media users, their reasons to interact with the tools and with public organizations?
5. What is the nature and extent of using social media and web 2.0 tools in various activities and what motivates users to participate in online civic engagement?
6. Which social media tools do government officials use and how prevalent do government officials see social media in their organization?
7. Can the new generation of web 2.0 technologies and extended use of social media in government have the capability to bring positive opportunities to enhance change and the overall citizen engagement with public sector authorities?
8. What are the long term implications of social media sites?
9. What are the main challenges and threats that will emerge from the use of social media technologies and in government organizations?
10. What is the perception on the key changes and development of social media trends in web 3.0 and web 4.0 in various activities?

The targeted readership for this article is researchers and PhD students who would be interested in: (1) a comprehensive study of the development of social media technologies and tools from web 1.0 to web 4.0; and a complete analyses of social media tools including functionality, characteristics and usage (2) the challenges surrounding social media and how social media technology initiatives can assist in the future trends towards web 3.0 and 4.0 (3) proposing studies to address future research gaps and identify significant findings and implications towards the perspectives of social media (4) how government employment of social media technologies can provide numerous key opportunities such as the nature of online engaged civic activities and the demand side of using social media to communicate with government officials.

The remaining sections of the paper will be organized in the following way: firstly, the background and related studies on the history of social media web 1.0 - 4.0, the all-inclusive study of social media technologies and the value social media has in e-government will be introduced. Secondly, the paper will describe the research method used to select and review the data material for the research with a constructed framework for analysis; and the description of the publically available datasets from the Pew Internet and American Life Project survey on Americans' use of the Internet. This will then be followed by the results section which includes findings of the systematic review, where a detailed description of the identified literature review findings; and the findings of the statistical analyses that were conducted to examine characteristics of dependent and predictor variables regarding social media sites, and a full discussion of their implications will be presented. Finally, a conclusion and recommendation will present a summary of the contribution that this study has made to the phenomenon of social media and provide suggestions for future research to address any identified gaps in the study.

## **Chapter 2: Literature Review**

### **2.1 Social Media**

This chapter looks at the background of social media, an overview of Web 2.0 and social media, and finally an outline of the value and perceived benefits of social media in e-government.

### **2.1.1 Definition of Social Media**

Social Media refers to an online service existing on the Web 2.0 platform for people to interact and communicate in order to create, share and exchange interests, information and activities globally in virtual communities and networks (Dawot and Ibrahim, 2014). The social media platforms allow individuals and communities to create, share and discuss user generated content which showcases people's likes, dislikes and activities. Kaplan and Haenlein (2010) suggest social media is a group of internet based applications that enables users to interact with other like-minded users to exchange user generated content.

### **2.1.2 Definition of Social Networks**

In this study, social networks are defined as an internet platform that allows users to create profiles to meet other individuals, to add them to their connection of like-minded people with similar ideas, attitudes, opinions and interests; where they can share content and expand their community and main relationships.

A social networking site has introduced substantial changes to how organizations, communities, and individuals communicate with each other. The benefit of social networking is the numerous ways individuals have to interact (Cecconi, 2007). The specific communication resources that are used to build social media technologies are chat, online messaging, wiki, email, video, photo sharing, blog and microblogging, RSS, forums and crowdsourcing (Kaplan and Haenlein, 2010).

### **2.1.3 The chronology of social media**

The explosion of social media has become a phenomenon so it is important to understand the spectacular history of social media and how it has evolved over the last 30 years.

### **2.1.4 The 1970s**

According to Patil, (2013) Social Media was first introduced in 1971, when the first email was sent by computer engineer, Ray Tomlinson, as a test message to himself. Then, in 1978 the Bulletin Board System (BBS) was created. The BBS was hosted on personal computers which needed users to dial in through the modem of a host computer, and exchange data via phone lines to other users (Edosomwan et al., 2011; Patil, 2013). Patil (2013) states the BBS was the first

system that allowed users to interact with each other through the internet. Although the system was slow, it gave a good start for online interaction but only one user could log in at a time.

In 1979, Usenet was developed and was a global delivered internet discussion system. It originated from graduate students from Duke University, Tom Truscott and Jim Ellis. They invented the system as an early bulletin board to distribute categorized messages, which enabled users to read and send messages to one or more groups (Edosomwan et al., 2011; Patil, 2013). These categories were known as newsgroups. Usenet delivered the first copies of early web browsers which had no main server or devoted administrator (Edosomwan et al., 2011; Patil, 2013).

### **2.1.5 The 1980s**

In 1985 The Whole Earth 'Electronic Link (WELL) was launched and was a social-networking website that started as part of generalized online communities. The founders, who were Stewart Brand and Larry Brilliant, started it with a discussion between the writers and readers of the Whole Earth Review, which pioneered the lively and knowledgeable gathering that continues today (Edosomwan et al., 2011).

In 1986, LISTSERV was introduced and is an automatic mailing-list server created by Eric Thomas. The email management system enabled an email that is addressed to the LISTSERV mailing list to be automatically sent to everyone on the list immediately (Edosomwan et al., 2011). The system was similar to a newsgroup or forum, except the messages were transmitted as email which reached a number of people on the list.

Following in 1988, Internet Relay Chat (IRC) was introduced to replicate the idea of meeting someone face to face. It is the father of instant messaging that is known today (Patil, 2013). It formed the concept of real-time Internet text messaging or chatting; and was built primarily for group discussion in forums but also allowing one-to-one communication by private messaging, including chat and transferring data. ICR was utilized for file and link sharing and mainly for keeping in contact with users (Patil, 2013). From May 2009, over half a million users at a time were served by the top 100 ICR networks with a hundred thousand channels working on around 1,500 servers globally.



### **2.1.6 The 1990s**

In 1991 the World Wide Web was introduced when private internet service providers (ISPs) in the United States began to lead operations in 1994 or 1995 and giving millions of home users the opportunity to experience the web (Hershey, 2010; Patil, 2013). Netiquette, as a control mechanism, was the first online social media etiquette standards that were proposed, and by the late 1990s internet forums grew to be popular and started to replace Usenet and BBS as the fundamental platform for topic discussions. In 1991, Tim-Berners Lee, created the first webpage and introduced the phenomenon of millions and millions of content filled webpages on the internet.

In 1994 the first personal blog was introduced by Swarthmore college student, Justin Hall, the founding father of personal blogging and in 1995 the creation of Classmates by Randy Conrads was introduced. In 2008 Classmates was ranked number three by Nielsen Online used by unique monthly visitors in home or work as one of the top social networking sites (Patil, 2013). The purpose of this social media site is to facilitate members in finding friends and acquaintances from different stages of their lives: school, college, clubs and work. The site has over 50 million members.

By 1997, another social network site was launched which was known as SixDegrees.com. The site enabled users to create profiles, have a friends list and browse their friends' lists. SixDegrees.com branded itself as a tool that enabled its users to connect with other individuals and send messages (Boyd and Ellison, 2008). Users could send private messages and become friends with other users they connected with on the site and list these friends in first, second and third degrees. The service is no longer available after it was shut down in 2001 and now it is only open for members (Boyd and Ellison, 2008). It was often regarded and known as the first modern social media site and was very popular at the time with over a million users but some research identify Classmates.com as the original social networking site (Kim et al, 2013). AOL instant messenger was also launched giving instant messengers a popular boost. Following from that Hotmail email services is introduced and weblog is coined by Jom Barger.

In 1998, the world's leading internet search engine, GOOGLE was launched but it was the year 1999 that quite a few social media sites were emerging. Some of them included AsianAvenue,

MiGente, BlackPlanet (Boyd and Ellison, 2008). They enabled users to not only create profiles and to chat, post photos or videos about specific interests in their community but to add friends and normally without getting permission. Individuals were able to create professional, personal and dating profiles on the sites. Although they are perceived as early forms of social networks, they had no innovative concepts among them.

In 1999 LiveJournal was launched and took a different approach to social networking. This social network was created to constantly update blogs and encouraged users to follow each other and create groups to interact with. It was the pioneer to live updates that are currently seen in social networks (Boyd and Ellison, 2008).

#### **2.1.7 The early 2000s**

In 2000, the dot com bubble burst causing the stock market to crash immediately. This was major setback for web entrepreneurs who re-evaluated what direction websites could pursue.

Then in 2000, the site that enabled free content sharing of encyclopedia knowledge called Wikipedia was also introduced. The year also saw various networking sites. For example, LunarStorm emerge which is a commercial -financed, Swedish social-networking website for teenagers. It was shut down by 2010 as it lacked activity after 2007(Ahmad, 2011).

Then in 2002, Friendster was launched and pioneered the online connection of real world friends. The user base expands to 3 million within the first three months (Boyd and Ellison, 2008). The year also introduced Skyblog that allowed users to create blogs, profiles and send and receive messages with other registered users; and showcased the original musical creations of its members (Edosomwan et al., 2011). Another site was Fotolog which was the world's leading photo-blogging website, one of the world's biggest social-media websites and a global cultural sensation (Edosomwan et al., 2011).

Following in 2003, My Space was introduced and initially was seen as a Friendster clone and the first version was hastily coded in 10 days and users were allowed to completely modify the look and design of their profiles. The site quickly became the largest social networking site in 2006 (Edosomwan et al., 2011). The bloggers platform called WordPress was created and Second Life (SL), a virtual world accessed on the internet, began. This site allowed its users, called Residents,

to interact with other users as avatars. Residents can meet other residents to socialize and join in individual and group activities, as well as create and exchange virtual services with each other and travel the world (Kaplan and Haenlein, 2010). LINKEDIN was created and is the world's most popularly used professional and business related social media site for members to make connections with business partners and industry experts where members can recommend job candidates to prospective members (Zhou et al., 2011).

In 2004 FACEBOOK was launched and originated with US college students connecting with each other. It was introduced at Harvard University and more than 19, 500 students signed up in the first month (Boyd and Ellison, 2008; Ahmad, 2011). In 2005 the first leading video hosting and sharing site called YouTube was launched and quickly popularized video sharing tools from Web 2.0 applications. It allowed users to upload videos and share them through YouTube or by embedding them on other websites (social networks, blogs, forums and mashups).

By 2006, TWITTER was introduced as a micro blogging service. Users post and read messages called "tweets," which are text-based posts shown on a user's profile page. Its unique features include a follow button to follow other users or to be followed, and a home feed page that enables users to post photos and videos directly as well as updating tweets on certain topics. The most famous feature is being able to search for topics by a hashtag and the site is more of a platform than a service. Also in 2007, the microblogging platform and social media website called tumblr, was established by David Karp and owned by Yahoo! Inc. It provides professional and full adjustable templates, bookmarklets, photos, mobile apps and a social network. Users can upload photos, video, text, audio, links, conversations and other content on a short blog-like website or follow other user's blogs and being able to keep posted content on their blogs private. FriendFeed in 2007 was also created to combine updates from social media consisting of networking websites, bookmarking websites, blogs and micro-blogs. It was lately purchased by Facebook and allows users to incorporate most of their online activities such as Twitter, RSS feeds, and Flickr photos including others into one area space (Edosomwan et al., 2011; Ahmad, 2011).

In 2008, Ping.fm was launched to follow in the social media market and is a free social media and micro-blogging web service that allows users to post to numerous social networks at the

same time (Edosomwan et al., 2011). An update that has been shared on Ping.fm drives the update to many different websites at once; this is to enable individuals using a number of different social networks to only update their status once instead of update it on all media. By 2008, Facebook overtakes Myspace as the foremost social media site with monthly unique visitors (Zhou et al., 2011). The two sites are hugely more popular than Friendster who was the original friends connecting social media site.

### **2.1.8 The late 2000s**

In 2009 Foursquare, a location based social networking site was launched. It allows users to “check in” to locations around the world. Also in that year Netlog began and is a Belgian social network and website that was formerly known as Facebox and Bingbox. It was specifically aimed for European youth (Edosomwan et al., 2011).

In 2010, Pinterest launches, a visual site that allows users to collect images for their different project boards as interests. They can create, contribute and share the boards of visual bookmarks that are known as Pins. Users can follow other individual’s boards of the same interest and also use the boards as a visual diary of planned and organized events, articles and recipes. The social network called Instagram also launched in October 2010. The site is a photo and video platform that users can edit and hashtag their images to share with the world. It became a highly popular service and within two years it had a user base of over 100 million and 60 million photos posted per day. Also in 2010 Google Buzz was introduced and is a social-networking and messaging tool that is incorporated into Google’s Web-based email program, Gmail. Users share status messages and comments, photos, videos and links that are arranged into conversations. Users can also share content either publicly to the world or privately to a group of friends. The site was built as an attempt to compete with Facebook and Twitter (Edosomwan et al., 2011).

In 2011 Google+, a social network driven by Google, Inc., launched and incorporated a number of Google products such as Buzz and Profiles. One key feature of Google+ is an emphasis on sharing content which is only aimed at subsets of your social group, Circles. Circles refer to small groups of people with whom it is possible to share; each circle is grouped into categories such as friends, family, classmates and co-workers. The site also has community video chatrooms called “hangouts” and has 359 million monthly active users. Snapchat was also

introduced as a mobile application that allowed users to send photos or short videos to friends. It has risen in popularity due to the fact that once a snap is received and seen it will self-delete completely from the recipient's phone.

## **2.2 The role of social media**

### **2.2.1 Social media use and profile of users**

Whilst the main purpose for using social media is to facilitate social interaction, many social media platforms are also used for information seeking, social engagement in terms of belonging and search for identity, by joining a group and building relationships and maintaining them, for example, Facebook for building a community with a vast range of users both for personal and general use whilst LinkedIn supports connection with the business community and entrepreneurs to build relationships with potential employers whilst increasing their own professional profile (Fuduric and Mandelli, 2013; Chinthakayala et al., 2013; Chow and Shi, 2015). Similarly social media provides users the opportunity to present themselves to others by constructing a user profile and allowing other users to interact with them by exchanging text, images, photos, and videos and linking it to other members of the site to increase the value of the applications that is solely based on user generated content (van Zyl, 2008; Pfeil et al., 2009; Zhou et al., 2011; Lin and Lu, 2011; Smith et al., 2012; Kim et al., 2013; Jussila et al., 2014; Scheepers et al., 2014).

Although there are many studies on social media, little attention has been given to the exact users of social media. To date, the most recent research by Lenhart (2009) maintains that the predominate social networking users are young adult with three quarters of adults users are under 25 yrs and have a social network profile. Also the rapid growth of social media is attracting more and more adults and social networking site users are frequent visitors and a reported one third checking their profile page daily. Teenage users are reported to be the most dominant users with almost half admitting that they log into their profile at least once a day, and males and females were equally found to have social networking profiles and engage with it for three hours a day on each site (Raacke and Bonds-Raacke, 2008). Also research from the Pew Internet report highlight the older generation as the fastest-growing social media users. The report showed that 55-64 aged group grew by 88% in May 2010 in the use of social networks.

These findings lead to questions of what type of social media user profile belongs to social media tools like micro-blogging sites (Twitter), Content community sites (YouTube) and social networking sites (Facebook). Social media tools such as social networking sites are mainly built to support collaboration and interaction by allowing users to develop and maintain connections with other people through user generated content (Fuduric and Mandelli, 2013). In addition social networking site users manage their own social networks by creating the content themselves and have the option to choose who and what they want to share with friends/family or the general public (Chinthakayala et al., 2013; Jang, Cheng and Chen, 2013). More specifically, social networking sites increases collaboration and interaction as more users are engaging with the sites, therefore there is opportunity to reach more people to share information, opinions experiences, insights, and perspectives from all interested parties (Malita, 2011).

### **2.2.2 Functionalities and usage of social media and social networks**

The functionalities of social media tools varies among some studies, but the essential technological and ideological features are quite similar and consistent. The fundamental functionality of social media is user generated content as users generally create the content of media (Dawot and Ibrahim, 2014). In addition Bathon et al., (2007) focused on the “honeycomb” of some functional building blocks of social media. This consisted of 1) identity, 2) conversation, 3) sharing, 4) presence, 5) relationship, 6) reputation and 7) groups. The construction of the honeycomb is based on how people make use of social media (Kietzmann et al., 2011).

However, Dawot and Ibrahim (2014) has shown that, social media have their own functionalities that are grouped on three core design principles: Individual, Conversation and Community. Essentially, the primary features of social media is based on the user profile, online connection and online community which are selected from the desired functionality (Dawot and Ibrahim, 2014). Similarly, social networking sites are built as powerful communication platforms that enables users to present themselves to communicate with others to exchange information in the most efficient and effective way. Thereby social networking sites form the bases of maintaining social relationships and to search for users with similar interests, activities, events and providing or gathering content that has created, shared all contributed by other users (Powell, 2009; Kane

et al., 2009; Pfeil et al., 2009; Lin and Lu, 2011; Heidemann et al., 2012; Cheng and Chen, 2013).

### **2.2.3 Characteristics and classifications of social media and social networks**

Existing literature present various forms of social media characteristics. Whilst Davis and Mintz (2009) agree that social media application characteristics are:

- User generated social content: social media enable site visitors to submit content that others can access
- Social networking: users of social media join together in online groups and relationships, which allows them to see profile information about the people to whom they are connected and to share information. It provides a digital space for meeting and exchanging ideas, products, and information with others
- Collaboration: Users engage in conversations, co-creation of content, collaborative filtering, and collective action
- Cross-platform data sharing: sharing contents by transferring data across sites

Bradley (2010) cited in (Malita, 2011) suggest that six core principles define characteristics of social media that form communication and collaboration. These include: Participation, Collective, Transparency, Independence, Persistence and Emergence.

Heidemann et al., (2012) assessed articles that addressed the characteristics of social networks. The authors found that the characteristics of social media form the back bone of social networks and activity links among users. A central theme identified was the visibility and searchability of well-connected users on social networks that allows exposure to other users to promote a viral delivery of information and resources to users who are beyond their network of connected members. This is usually accomplished by exchanging information through messages or wall post on Facebook and emphasises the significance of users communication activity.

Some researchers reviewed scholarly studies to understand the classification of social media. According to Elefant (2011) social media sites based on various functions provided can be classified into the following four key categories:

- directories that serve resume writing functions with rating capabilities performed by clients and colleagues, e.g. LinkedIn
- Communication channel that provides information and text dissemination functions on an ongoing and up-to-date basis, for example Twitter and all types of blogs such as a blogger
- communities and ratings sites that serve less formal interactions with enclosed sites and can be used for events promotion, for example Facebook and the fan pages available on it
- archiving and sharing sites that used for storing and sharing videos, documents and slides with active feedback channels, for example YouTube and Slide share

Musial and Kazienko (2012) analysed the classification of social media according to the following criteria as summarised in Figure 1.

<b>Classification of social media groups</b>	<b>Concept of each group</b>
Purpose of the Internet service	<p>Social media applications for:</p> <ul style="list-style-type: none"> <li>• communication: email, instant messengers</li> <li>• For Sharing user achievements: blog services, multimedia sharing systems, social bookmarking</li> <li>• For socialising: social networking sites</li> <li>• For discussion: internet forums</li> <li>• For collaboration: Wikis, virtual worlds</li> <li>• For linking with friends and interesting people: social networking sites, FOAF</li> </ul>
The character of the relationship that connects two IIDs	<p>Two kind of relations are differentiated between business and social connections i.e. LinkedIn (business) with professionals connecting with chats and colleagues, and Facebook (social) emotional connection with family and friends</p>



The type of the internet identities that build the social network	<p>Three types of social networks exists. Those that consist of:</p> <ul style="list-style-type: none"> <li>• Only individual identities</li> <li>• Only group identities</li> <li>• Both of them</li> </ul>
Type of communication channel	Type of communication channel, i.e. blogs, email, multi-media sharing systems, instant messengers, video conferencing
Real time or non real time networks	Asynchronous communication between two persons or from one person to a group of people e.g. Multimedia sharing system like YouTube enables all users from the given community to read all messages submitted by every single member of the network
Open/restricted access	<p>This is the type of access to the social network. The networks can be either open public or restricted access.</p> <p>In the former everybody can join them e.g. Facebook, Myspace etc. While the latter implies that if one wants to become a member then somebody else who has already been a member must invite this person, e.g. LinkedIn</p>
Awareness of relationship	<p>Different level of awareness of their relationships with other members of the network</p> <p>A visual interface that directly presents relationships of a given user e.g. a common case for social networking sites that have main features consisting of self-expression (maintenance of personal profiles), including presentation of personal achievements, striking up relationships with others</p>

	and mutual communication
Dedicated/common service based	<p>People can get into relationship according to their activities, e.g. via common activities, e.g. commenting the same picture into photo publishing site.</p> <p>The relationships derived from such information are not directly visible for the network member</p>

**Figure 1: Classification of social media tools in accordance to Musial and Kazienko (2012)**

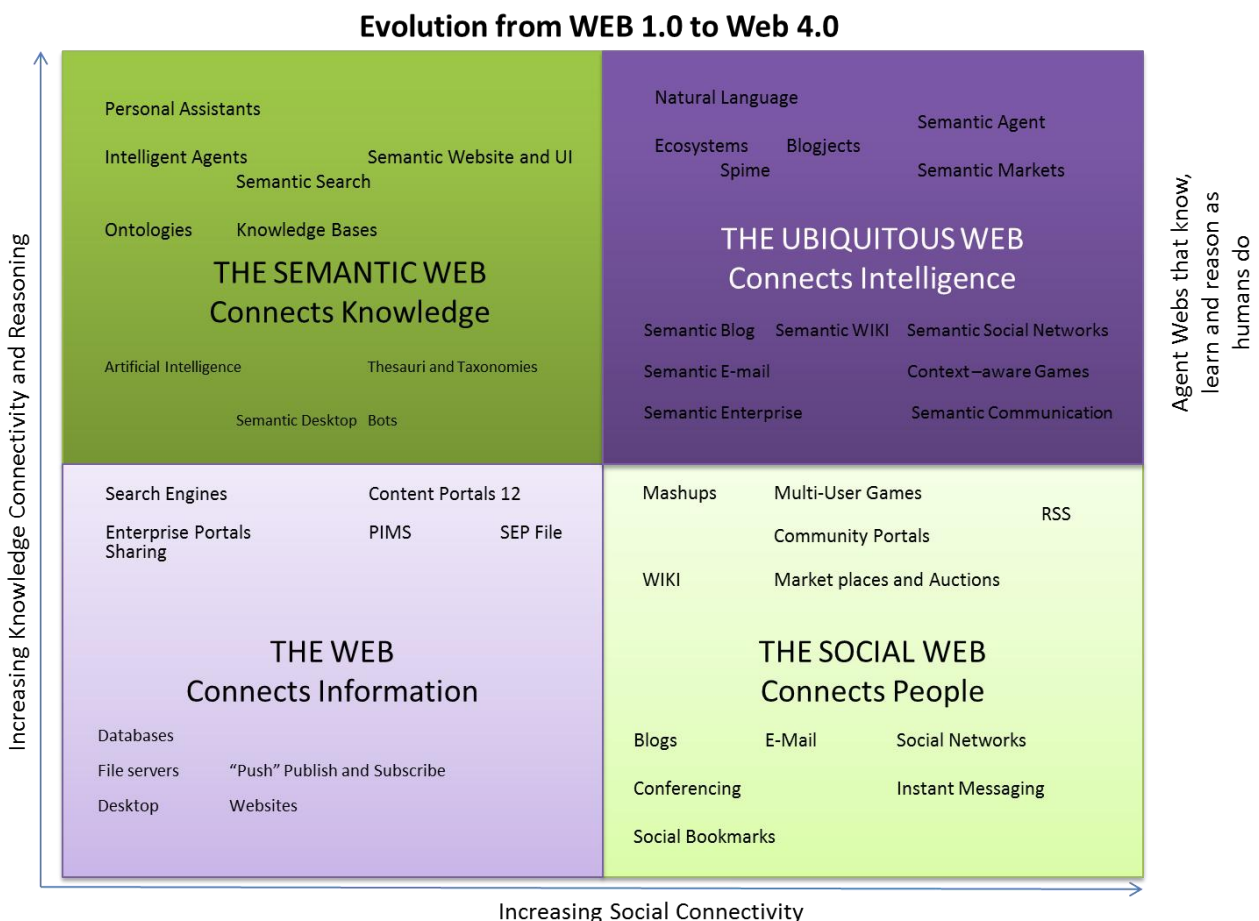
Several Scholarly articles (Mesch and Talmel, 2006; Bughin and Munyika, 2007; Bonneau and Preibusch, 2010; Thadani and Cheung, 2011) advocate that the classification of social networks can be differentiated by their initial range of usage admit “ Private networks”(e.g. FaceBook, MySpace) and “business networks” (LinkedIn, Xing). As social networks were primarily created for private use, it is easy to understand why private networks such as Facebook are known to be the most popular and well known social networks around the globe. Moreover, to differentiate private networks from business networks, the latter specialises in facilitating business contacts and searching for jobs. It also includes user profiles being enlisted to support problem-solving and more knowledge sharing and exchanging user's activity within the professional network (Strufe, 2010).

Other researchers identified that some social networks are aimed at users with no general focus known as “general networks” (Facebook) and social networks aimed at users with specific focuses identified as “Special interests networks” (BottleTalk) (Leimeister et al., 2004; Boyd and Ellison, 2008).

Heidemann et al., (2012) define special interests networks as “technical online platforms that have a particular focus and aim at specific target groups of users who interact socially”. More specifically, these platforms allow users to create public or semi-public profiles and to unite with a list of other users with whom they share a connection (Heidemann et al., 2012).

## 2.2.4 Web Generation

While there has been research has been focusing on Web 2.0 and social media, other researchers assess the evolution of social media and the web generation. The intent of research is to understand the future of the web by exploring Web 3.0 and social applications which include the web being more portable and personal; and It will also leveraged the power of people where it is easier to find precisely what you are looking for (Barassi and Trere, 2012; Hall and Tiropanis, 2012; Loureiro et al., 2012; Aghaei et al., 2012; Kumar et al., 2014; Nath et al., 2014). It also explores Web 4.0 which highlights the concept of the web being based on computer intelligence and as being ubiquitous (Aghaei et al., 2012). Fig. 2 presents the relationship between Web 1.0 to Web 4.0.



**Figure 2: Generation of the web (in accordance to Davis (2008) "Semantic Wave 2008: Industry Roadmap to Web 3.0 and Multibillion Dollar Market Opportunities").**

## **2.3 Web 2.0 and social media tools**

### **2.3.1 Web 2.0 applications and tools**

Researchers evaluate a range of Web 2.0 technology perspectives to understand the effectiveness and efficiency that enables the creation and delivery of content that is social media. Web 2.0 perspectives include a technological innovation for users to generate content collaboratively. It also supports communication on the web and facilitates information sharing and interaction where the global network functions as a platform and is simple for first time users. Web 2.0 applications illustrate that users can manipulate the technologies in more active ways as they can build and maintain their social networks and involve themselves in a deeper interaction for social engagement. User participation, also known as the read/write web describes many researchers definition of Web 2.0. The technologies include social networking sites, blogs, wiki's, RSS, mashups, tags, media sharing tools, folksonomy and bookmarking (Murugan, 2007; Harrison and Barthel, 2009; Gu and Wide'n-Wulff, 2010; Harris and Rea, 2010; Babushkina, 2010; Zhou et al., 2011; Jang, Chang, Chen, 2013; Wu and Zhang, 2014; Jussila et al., 2014).

Web 2.0 is a collection of applications, business strategies and social trends that is effectively more dynamic and interactive than Web 1.0 as users can both access and contribute content to websites that could not be achieved previously in Web 1.0, for example, users can also be updated with latest content even if they have not visited the site. Moreover, the users' heavy involvement and participation as both content producer and provider places an importance on community and collaboration (Murugesan, 2007; Boll, 2007; Anderson, 2007; van Zyl, 2008; Lakhtaria and Nagamalai, 2011).

Web 2.0 initiatives has tremendously impacted a majority of application in other areas such as providing a faster and richer platforms to users in terms of user friendly interfaces that persuade and support participation (Berthan et al., 2012).

### **2.3.2 Range of social media technologies and mobile social networks**

According to Kaplan and Haenlein (2010) there are various social networking sites that have evolved recently and are now enormously popular worldwide. These social networking sites all use the different type of technologies that include collaborative projects such as Wikipedia, content communities for example, Flickr and blogs and microblogs, for instance Twitter. From March 2014, the leading popular social media sites are:

- Facebook. In 2013 the company for the first time joined the Fortune 500 list where they were placed 462 based on its 2012 income of \$5.1bn (£3.3bn).
- Twitter; and in 2009 it was named the third biggest social media site. In 2013 the site reported more than 500 million registered users and in 2012 it was valued at \$8.4bn (£5.4bn).
- LinkedIn. In June 2013 LinkedIn has more than 225 million acquired users in more than 200 countries and territories.
- Pinterest. In January 2012 the site had 11.7 million unique users, making it the fastest site in history to break through the 10 million unique visitor mark. In 2012 it was valued at \$1.5bn (£960m).
- Google+ is predicted to be a big winner in 2014 because people will finally accept it as a great place to form connections, meet friends and share experiences in completely cool and captivating ways.
- Tumblr; since 2007 the site valuation has increased from \$3m to an estimated \$800m and there has been over 300 tumblr meetups per month and has grown globally 900% with 10 million monthly unique visitors to 90 million unique monthly visitors in the last year alone. The site has become addictive has a highly engaged audience with 2% of its audience making up 43% of total visits. The top countries using it are USA, Brazil, UK, Canada, Germany, Japan and Australia.
- Instagram. The popular photo and video sharing site that allows users to edit and hashtag their snaps to share with the world was launched in 2010. It gained rapid popularity and within two years had 100 million active users. In April 2012 Facebook bought the business for \$1bn (£640m), with chief executive Kevin Systrom reportedly pocketing \$400m (£256m) from the deal alone.

- VK is the second biggest social network in Europe after Facebook. It is popular especially among Russian speaking users around the world, particularly Russia, Ukraine, Azerbaijan, Kazakhstan, Moldova, Belarus and Israel. From Dec 2012, the site has 195 million accounts and is ranked 19 in Alexa's Top 500 sites and is the second most visited website in Russia.
- Flickr is an online photo-sharing and image/video hosting service where you can share photos and videos with your friends, families or others and you can organize the photos in a unique way. Flickr was originally the king of the photo sharing social media platform, before Picasa, Instagram and Pinterest were launched. As of 2013, Flickr has come back on top as with new features such as a redesign which is much better than the old design, images can be backed up and users have 1TB of storage space to place their images of any size.
- Myspace; although Myspace was the most visited social media site, beating Google as the most visited website in the US in 2006, its user base declined after 2008. Regardless of this failure, Myspace set the basis for today's mass media social networking services, such as its gaming platform that pioneered the success of the current social networking games king – Zynga. Myspace now has a strict policy where users can only be allowed to sign up if over 14 years of age, giving people peace of mind of its security and safety regulations.
- Tagged was created to assist users to meet lots of new people with similar interests within a short timeframe. Tagged persuades its users to meet other individuals through shared interests, with the perception of increasing your network to meet as many people as possible.
- Ask.fm launched in Latvia 2010 for the purpose of allowing unknown users to ask other users questions. It recently become under tabloid news as controversial after the suicide of a 14-year-old girl who was “cyber-bullied” on the network.
- MeetUp is an online social media portal that enables offline group meetings in various places around the world. The portal is an easy site for anyone to set up a local group or find one of the thousands already meeting up face-to-face. Over 2,000 groups join in local communities every day, each one having the purpose of improving themselves or their communities.

- MeetME is a social network website founded in 2005. MeetME was formally known as myYearBook until June 2012, when it was renamed MeetMe to give the meaning of making new friends which is what the website is intended for. The site proved to be successful with the rebranding. Back in July 2011, myYearbook stated it had agreed to be obtained by Latino social networking site Quepasa for \$100 Million in Cash and Stock. In November 11, 2011, the purchase was completed. In December 2011, the site launched an iPad app to try to reach the tablet market.
  - In October 2013, MeetMe launched Charm, a mobile dating app. The site came to scrutiny in February 2014 when it was accused of undermining California's Unfair Competition Law for allowing minors aged 13-17 to be violated by sexual predators that use the site to target underage victims.
- Classmates.com is different from most social networks, meaning the majority of its features are available to premium member. Classmates.com is primarily used to reconnect with old classmates. The site includes a search engine that allows you to search for people who attended the same school with you. You can create a basic Classmates.com profile which is free and easy. However, only paid users can access most of the advanced features of Classmates.com.

## **2.4 Mobile Social Media**

### **2.4.1 Definition and context**

Mobile social media is defined as a group of mobile applications that allow the creation and exchange of user-generated content with an overall enhanced and enriched experience such as a service to locate the users closest friends (Lakhtaria and Nagamalai, 2011; Kaplan, 2012; Wehbe and Bouabdallah, 2012).

Mobile Social Media has emerged recently which is a combination of social media and mobile devices. It is a band of mobile applications that create and exchanges user generated content. The fact that mobile social media operates on mobile devices, it is different from the usual social media by featuring new components such as a user's current location (Kaplan and Haenlein, 2010). Mobile social media is favoured to web social media as users are able to be in contact with their friend with real time access at any place and any time and they can in any location share content instantly. Other services that the platform offers are user being able to locate their

friends and mobile applications which allow users to send SMS messages for free if they have 3G provided by their mobile network service which allows application to be operated on the internet. Social Media on mobile has enabled convenient, easy and quick services for users to interact with other users as they please. Mobile social networking takes place in virtual communities and a common trend is native mobile social networks that are created such as Foursquare, Instagram and Path, applications built towards mobile functionality. Mobile web competes with mobile applications as mobile apps utilize existing social networks to build native social groups and publicize discovery, whilst web based social networks take advantage of mobile tools and accessibility. Since mobile web developed from exclusive mobile technologies and networks, to complete mobile access to the Internet, the difference changed to the following two categories:

1. Web based social networks to be extended for mobile access over mobile browsers and smartphone applications.
2. Native mobile social networks to have committed attention on mobile usage such as mobile interaction, location-based services, and augmented authenticity towards mobile devices and technology.

Nevertheless, web based social networking and mobile systems frequently work in league to extend content, broaden accessibility and users to be connected from any location.

According to Lane, Walter – Flynn, Benlamlih (2009), the history of social networks on mobile technology began in 1999 with chat and texting services. In 2004, camera phones and 3G networks launched a second generation of platforms initially aimed at dating services. By 2006/2007, third generation technologies emerged to provide richer services largely based on WAP 2.0 and MMS. A fourth generation of MSN emerged in 2008 by offering users with a high degree of control over their broadcasting of information through profiles. Since 2008, technologies such as Web 2.0 widgets, Flash Lite, Open Social and the OHA operating system which includes advanced social media capture and transfer systems, has delivered a greater level of functionality to mobile social networks.

Below is a diagram in fig.3 from Informa Telecoms and Media detailing the four generations of mobile social networks.



1 <sup>st</sup> generation	<ul style="list-style-type: none"> <li>• Began in 1999/early 2000, continues to be offered</li> <li>• Features text-only chat via chat “rooms”; most people anonymous</li> <li>• Technology: Application-based, pre-installed on mobile handsets</li> <li>• Business model: pay as you go (pre-pay) or subscription based</li> </ul>
2 <sup>nd</sup> generation	<ul style="list-style-type: none"> <li>• Began in 2004 through 2006, based on region; usually coinciding with launches of 3G and camera phones, continues to be offered</li> <li>• Features: uploading of photos, mobile search for person based on simple profile (gender, type of relationship sought, hair colour, age, zip code), contact/flirt with person anonymously, rating/voting Technologies: SMS for purchase confirmation, pre-installed handset and user downloaded applications, WAP 1.0 for navigation, WAP 2.0 beginnings (no Web 2.0 features) Regional distribution: Japan, Korea, Australia, Western Europe, US</li> <li>• Applications: mostly dating</li> <li>• Business model: pay as you go (pre-pay) or subscription based</li> </ul>
3 <sup>rd</sup> generation	<ul style="list-style-type: none"> <li>• Experiments/trials in 2006, reaches widespread adoption in 2008/2009</li> <li>• Features: Richer user experience, automatic publishing to web profile and status update, some Web 2.0 features, search by group/join interest groups, alerts of updates to favourite profiles, location-based services emerging, free/ad-supported content (games, ringtones, etc.), UGC content ratings, content sharing, mobile, audio, asynchronous conversation online and via the cell (Utterz)</li> <li>• Technologies: WAP 2.0, Java on the server, MMS, voice capture in WAP 2.0?</li> <li>• Applications: general interest, music, mobile specific content distribution</li> <li>• Regional distribution: Japan, Korea, Western Europe, North American (US), going global</li> <li>• Business models: Advertising and ad-supported content become increasingly important</li> <li>• Pay as you go (pre-pay) and subscription based still popular</li> <li>• Networks gain scale to become content distribution platform</li> </ul>
4 <sup>th</sup> generation	<ul style="list-style-type: none"> <li>• Begins in 2008, reaches maturity in 2010</li> <li>• Features: in addition to the above, presence, ability to hide/mask presence, asynchronous video conversation, multipoint audio chat conversation with one button, multiplayer mobile gaming</li> <li>• Technologies: Web 2.0 widgets, Flash Lite, Open Social, Open Handset Alliance</li> <li>• Business models: All of the above plus virtual currency - purchase and trade of virtual goods</li> <li>• Environment: Mobile/Online network consolidation, silos between communities are breaking down</li> </ul>

**Figure 3: Source: Informa Telecoms and Media**

### **2.4.2 Segmentation of Mobile Social Networking**

Originally, two basic types of mobile social networks existed. The first type is companies partnering with wireless phone carriers to deliver their communities through the default start pages on mobile phone browsers, for example JuiceCaster. The second is companies relying on other approaches to attract users as they do not have mobile phone carrier relationships.

Mobile social networks started to move towards individual needs, desires and interests which varied across a spectrum with every individual wanting a unique way to seek self - actualization and expression (Lane, Walter – Flynn, Benlamlih, 2009).

Mobile social networking sites enable people to create profiles, send and receive messages through phone or PC and visit an online version of a mobile site (Kaplan, 2012). There are six different models that are segmented by different networking sites. The majority of these sites have numerous features that can be used in a unique way or special functionalities that the other sites do not have; although the main functionality of all the site services are the same. Most of these sites have been categorized based on the following business models seen in Table 1.

<b>Mobile Segmented Models</b>	<b>Utility</b>
<b>Group Texter</b>	<ul style="list-style-type: none"> <li>• capability to send short text based messages to a large group of people at the same time as either a SMS or micro-blog</li> <li>• ensures messages reach the right people quickly in response time</li> </ul>
<b>Location Aware</b>	<ul style="list-style-type: none"> <li>• uses geotags to provide location information on users and their content</li> <li>• allows users to tag specific locations with location information and images</li> <li>• the tagged locations can be accessed by users which are mapped on a world map</li> </ul>
<b>Dating Service</b>	<ul style="list-style-type: none"> <li>• provides almost identical versions of online equivalents</li> <li>• allows users to create a profile which can be a match to other profiles online</li> <li>• some sites use radar to ping users if there is a matching single profile within certain distance including serious security measures to prevent unauthorized release of personal details without user consent.</li> </ul>
<b>Social Networking</b>	<ul style="list-style-type: none"> <li>• use online social networking sites as personally as possible</li> <li>• most of these sites use mobile portals of current existing and successful sites such as Facebook</li> <li>• a range of functions include instant messaging, chat, multimedia posts, photo sharing content and features such as comments and like buttons</li> <li>• model offer low-cost international calling and texting facilities</li> </ul>
<b>Media Share</b>	<ul style="list-style-type: none"> <li>• stores media content online for easy storage and access</li> <li>• an advanced version of the Group Texter category where</li> </ul>

	sending text messages, audio and video files are communicated among the group that are shared to the public for example Instagram
<b>Social Gaming</b>	<ul style="list-style-type: none"> <li>people connecting through both multi-player games and competitive single game players</li> </ul>
<b>Safety Issues in Mobile Social Networks</b>	<ul style="list-style-type: none"> <li>security, privacy and trust as issues of concern towards mobile usage</li> </ul>

**Table 1 Mobile Segmentation Models**

Scholarly studies addressing the emerging trends of mobile social media identified, that mobile social media will enable mobile devices to be the only form of communication that allows the global power to reach users worldwide and in different demographic groups. Furthermore, mobile social media harnesses the ability to integrate the virtual world and the real world; this enables the extension of Mobile Web 2.0 where instant connection with global reach is accessed by anyone, anywhere, anytime and with anything (Lakhtaria and Nagamala, 2011; Kaplan, 2012).

## **2.5 An Overview of Web 2.0 applications**

### **2.5.1 Web Social Media**

According to Wehbe and Bouabdallah (2012), Web Social Media are communication tools retrievable on the Internet which allow interaction with one or more individuals. When a user receives information, they can interact with the provider and with other users to create, discuss and share the content. Additionally, users can form communities where they share common interests such as sport, music or events to interact efficiently with each other. Currently, the communication resource tools to form web social media are blogs, micro-blogs, wikis, forums, chat, emailing, RSS, folksonomy, tagging, mashups, virtual worlds, communities and social networks summarised in Table 2.

<b>Web 2.0 Technology</b>	<b>Feature</b>	<b>Utility</b>
Blogs	Blog posts consist of text, images, videos, and links to other webpages	Used to publish information about topics of interest, personal diary and

		popular news trends. Bloggers allow readers to leave comments and to give them notification when new contents are up and ready. Notifications sent by protocol called Really Simple Syndication (RSS)
Forums	Message boards built into websites as a tool that allows online discussions surrounding various topics on particular matters or to seek advice on an issue	Managed by an administrator who can remove inappropriate posts but cannot drive or set up discussions. Differs from blogs as a blogger is the owner of the posted information but forum message boards are started by users
Podcast	Podcasts multimedia files such as audio or videos that are published on websites and users subscribe to them	Users cannot only upload and download files but virtual communities are formed by people subscribed to the same podcast.
Wikis	Websites that allow people to add, edit and delete content	Used for collaborative working for example a team with its members in various countries can create a large document
Content Communities	Websites that allow users to share a certain type of content such as photos, videos and bookmarks	Bookmark website allows users to store, search and share bookmarks with other users and either share it publicly or privately. Users can upload and share photos publicly or to a group of friends and share videos with subscribed users
Micro-Blogging	Allows users to share a restricted number of characters as content to be able to connect with friends or family	Leading micro-blogging website is Twitter to allow users to register and set up a profile to send text of 140 characters to the Twitter service. Text known as “tweets” can be sent by a mobile or website. Tweets appear on the users’ profile and received by users who are following the sender’s

		network
Social Networks	Communication tools that assist in creating and continuing social relationships with people	Allow users with similar interests to connect with others. A social network joined by registering with a new account through email. User can then add friends to their network to connect with and build more sets of friends as well as using a range of services to stay in contact with them such as share content, chat and discuss topics and create new events
Virtual Worlds	Platforms that replicate a three dimensional environment in which users can appear in the form of personalized avatars and interact with each other as they would in real life	The supreme manifestation of social media, as they give the maximum level of social existence and media richness of many applications. Virtual game worlds involve users who must take part in a game and abide by its strict rules in the environment of multiplayer online role-playing game. virtual social worlds, do not involve users to play online games, but rather enable them to select their behaviour liberally and importantly live a virtual life related to their real life
RSS	Really Simple Syndication (RSS) provides web content with links to the full version of content. An Atom enables users to track updates using an aggregator on the site	Users are notified of fresh published data on their favourite blog or website. The data is streamed at distributed sources based on the subscription made by the user. The full version of content can be used to extract categories or sub topics from the published article
Mashups	The combination of two or more websites into a single website that provides the content of both sites	Mashups reach into the API of a given application e.g. Twitter and Google Maps and extract including the web page features , and use them to introduce an application that adds

		value e.g. a website that integrates users tweets from their location which is pinned onto google maps
Tags	Keywords added to articles on social media sites. Tags are also known as labels, and the process of creating tags is known as tagging where users can track the content on websites	Tags are chosen informally and personally by the viewer and the user can gain access to all the content found by other users which is linked to the specific keyword
Folksonomy	The technique by collaboratively creating, classifying, and managing tags to annotate and categorise content	Collaborative tagging by using keywords generated by creators of the content

**Table 2 Sources: Godwin-Jones (2006); van Zyl (2008); Turban et al., (2012)**

## **2.6 Social Networks and Web 2.0 tools in E-Government**

### **2.6.1 Social Media in e-Governance**

The development of social media such as blogs, wikis and other social networking services such as Facebook, Twitter, LinkedIn and Instagram instigates governments around the world to connect to these sites in attempt to benefit from the new communication channels which is part of web 2.0 technologies. Governments that have connected to these social networking sites have ability to have interaction with citizens and expand their engagement and participation.

It is clearly visible that there is a push for governments to reach and interact more with citizens in their comfortable zone. Furthermore, social media exemplifies a strategic chance in helping the government to carefully engage with individuals, businesses and public agencies.

### **2.6.2 Advantages of Using Social Media in e-Governance**

There are various reasons as to why new technologies should be adopted in e-government and they include trust in the government and most importantly to have communication with citizens in order to build this trust with e-governance. The four main potential benefits of using social media sites are collaboration, empowerment, participation and time.

These can assist governments to attend to their people by advertising government information, services and collaboration with their shareholders bringing together government agencies,

business agencies' work, citizens and information. Internet usage can be expanded by social media to fully understand the advantage of e-governance. Social media sites also benefit e-governance by strengthening and monitoring services and reducing costs whilst enhancing their quality (Banday, 2013). By using these sites, governments can promote services, post job advertisements, seek public feedback and cooperation, announce and market events and collaborate geographically with diverse agencies. Given that social media has a vast prospectus for expanding citizen use of e-service and e-participation, its better usage by public citizens could enhance transparency which in turn can boost the trust in the government. In 2010 a report by the Center for Technology in Government which was titled as "Designing Social Media Policy for Government: Eight Essential Elements" identified eight crucial social media policies as an effort to study these procedures for patterns in content and approach and supplying a new resource to guide governments with social media policy development attempts. Their analysis produced eight important factors for a social media policy when they researched into the question of what constitutes core factors of a government social media policy.

These eight policies are: 1) employee access, 2) account management, 3) acceptable use, 4) employee conduct, 5) content, 6) security, 7) legal issues, and 8) citizen conduct.

They also reported that there are three distinct ways that government employees use and engage with social media tools at work. Their uses are for employee use for official agency interests, employee use for professional interests and employee use for personal interests. They finally concluded that the three uses are not mutually exclusive and at times the lines dividing between professional and personal or professional and official agency uses are not clear.

In 2010, David Landsbegern in his recent research work "Government as Part of the Revolution: Using Social Media to Achieve Public Goals" identified various techniques of how social media tools are used in several government agencies and assembled five methods that the researcher has been redesigned as shown in Fig. 4 of how social media tools can realize Government 2.0

<b>Mechanism</b>	<b>Variety</b>
1. Ideal Model: Rational voters and competitive elites	<ul style="list-style-type: none"> <li>• Responds to requests for information</li> <li>• Public/Private partnerships to respond to requests for information</li> <li>• Respond to requests for service</li> <li>• Public/Private partnerships to respond to requests for service</li> <li>• Helps citizens educate each other</li> <li>• Helps citizens synthesize, refine, and articulate needs</li> <li>• Hold government accountable</li> </ul>
2. Rule Compliance: Creating, Implementing and enforcing governmental policies & regulations	<ul style="list-style-type: none"> <li>• Participation in the policy process</li> <li>• Implementing laws and rules</li> <li>• Prevention of data thefts</li> </ul>
3. Civic virtue – Will social media, because of its public nature, create more civic virtue	<ul style="list-style-type: none"> <li>• Political elites push for, and highlight, the innovative use of social media</li> </ul>
4. Bureaucratic efficiency – Improved communications within, among and between bureaucracies and their stakeholders (G2C and G2B)	<ul style="list-style-type: none"> <li>• Cheaper and more effective communications</li> <li>• Faster communications</li> <li>• Produce an esprit de corps within government</li> </ul>
5. Empowerment - Empowering Individuals and developing new	<ul style="list-style-type: none"> <li>• Digital Inclusion – Demographics of social media</li> <li>• Social inclusion – Empowering stakeholders who would not be otherwise be heard</li> </ul>



leaders	<ul style="list-style-type: none"> <li>• Political inclusion – Translating digital and social inclusion into greater political inclusion</li> <li>• Enabling the faster exchange of good ideas and practices</li> <li>• Making it easier for persons of similar interests to find and work with one another</li> </ul>
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**Figure 4: Source: Mechanisms by which social media can realize Gov. 2.0, Landsbegern (2010)**

## **2.7 E-Government and Social media**

### **2.7.1 Migrating towards E-Government 2.0 and M-Government**

Various studies of e-government and social media such as Abu-Shanab and Khasawneh (2013) believe it is crucial for governments to be on social media sites as it helps build a high level of trust. This is particularly true for when governments wish to use social media as a channel to provide citizens with active information to show that they listen, monitor and respond to citizens. It also allows governments to create innovative ways to communicate with citizens such as having an insight on how they can benefit from social media tools in an effective and easy way from their presence on these sites.

There seems to be a general agreement on movement towards Govt 2.0 (See Mergel et al., 2009; Chadwick, 2009; Nam, 2011). However, Mergel et al., (2009) maintains that the recent upsurge of web 2.0 technologies can potentially lead public institutions to build real life-changing opportunities in relation to their fundamental issues of transparency, accountability, communication and collaboration and civic engagement; while Chadwick (2009) asserts that the utilization of web 2.0 for further participation of government policy-making can renew dialogue between citizens and government. In Nam's view, E-government 2.0 will help the government to achieve its goals with great level of efficiency, effectiveness and democracy to enable increased public awareness and citizens' engagement to a high level where their feedback about government services, policies and information will make the process transparent and open. Although these authors highlight the opportunities provided by web 2.0 technologies government

organizations, there have been challenges of adopting web 2.0 tools for the full beneficial approach to Government 2.0.

Finally, governments are currently using the communication channel of mobile devices with examples that include mServices, using the fact that mobile is widespread, from anywhere at any time in real time. Mobile interactive government (M-Government) is increasing rapidly since the number of people with access to smart phone has significantly risen (Millard, 2010).

A study by Kushchu (2007, cited in Millard, 2010) suggests that there are a number of certain attributes of M-Government which are essential for government services. These are 1) more convenient accessibility and availability, 2) Better precision and personalisation in targeting users and delivering content and 3) larger and wider user base compared to wire services e.g. power of reach. Currently there is a vast growth in mobile, smart and augmented reality apps for the purpose of personal and commercial use, which is frequently offered for particular uses on a local scale.

However, M-government has not really transform government organizations and there is huge potential for mobile applications that can use government data for people in any town or city to use. Recently, there have been calls for mobile phone developers who are able to make better use of government data than the government themselves (Millard, 2010). This movement is a realisation that the government do not have money to promote services that people want them to do; and they need to remember that their greatest advantage is citizens and would benefit of the opportunity to work with developers who work for free and understand mobile development.

Government 1.0 paradigm consisted of e-government services put online and mainly silo-centric, top-down, and minimum service innovation. Initiatives are expensive and often would fail and the overall government goal was to focus on themselves and put their needs first as seen in fig. 5.

Technology	E-Government 1.0
• Internet Portals	ICT in government now established BUT
	Expensive

<ul style="list-style-type: none"> <li>• Websites</li> <li>• Email</li> <li>• SMS</li> <li>• Online discussion Forums</li> </ul>	Many services successful but many expensive and frequently fail
	Delay in citizen take-up with only 20%-30%
	Government focused on systems that work efficiently and effectively e.g. tax and procurement systems, automation of registrations, permits and licenses
	Organizations and mind-sets rarely changed even before ICT was introduced
	Maximum systems being reached in type and scale of impact but never completed

**Figure 5: E-government 1.0**

The Government 2.0 paradigm focuses more on the demand side, user empowerment and engagement, benefits and impacts which deals with certain societal challenges (See Fig. 6).

<b>Technology</b>	<b>E-Government 2.0</b>
<ul style="list-style-type: none"> <li>• Social Networking</li> <li>• Social Software (Mashups)</li> <li>• Wikis</li> <li>• Blogs</li> <li>• RSS</li> <li>• Podcasting</li> <li>• Videos</li> <li>• Photos</li> </ul>	Characteristics of:
	Visible aspects e.g. social, professional and policy networking
	Invisible aspects e.g. mashing – up content and services
	Services which are (potentially) self-designed, self-created, self-directed
	Fully ‘open’ and user-driven government e.g. contents, services, policies for those who CAN
	Still user-centric and responsive for those who CANNOT
	Engaging, participative and democratic
	Open sourced and draws on many partners and inputs
	Web-oriented architecture (WOA) approach
	Blurring of roles and mandates

	BUT governments are extremely slow to utilize the full potential of Web 2.0 tools into their services
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**Figure 6: E-government 2.0**

### **2.7.2 Citizen engagement, citizen trust, citizen conduct, participation, and co-production**

Many studies including Arpit (2012) argue that social media for e-government brings in benefits such as collaboration, participation, empowerment and time by social interaction. It provides users the ability to connect with each other and build communities to socialise, share interests and information or achieve a goal. The empowerment of social media allows users a platform to speak and time allows users to publish content in real time. Also Prajapati and Sharma (2012) state the objective for governments to use social media is not just to disseminate information but to be able to engage with the public for a purposeful public participation. The two main following purposes for government usage of social media is seeking feedback from citizens and generic interactions based on issues (Prajapati and Sharma, 2012).

E-government has always had an issue of incorporating transparency in their activities. Although there are forms of transparency through the activities that are monitored by individuals, and groups outside of organizations, there is still a need to enhance government transparency. This is because a vast amount of information can be presented at a low cost and as long as people are connected to the Internet, they have the ability to access the information. This is supported by Roy (2014) who states that there have been many attempts by governments to increase transparency and openness of their activities through e-governance strategies.

In addition, Sandoval-Almazan and Gill-Garcia (2011) asserts that available tools such as blogs and social media (Twitter and Facebook), can help promote internal participation by clear strategies in terms of improving relationships, building new connections, and assist public agencies to make informed decisions through the available complete information. Other tools such as wikis help share ideas and promote organized, discussions about public policies.

In Sandoval-Almazan and Gill- Garcia's view, the use of groups on Facebook could connect citizens with other citizens and public agencies in the same city to discuss public issues or just share problems.

The concept of citizen sourcing has been suggested to enhance citizen engagement and improving citizen –government relationships. One benefit of citizen sourcing is allowing government agencies to crowd source their way out of problems. Wikis and social networking can help promote citizen sourcing and one example of using social networking as a service for citizen sourcing is the department of Interior’s U.S. Geological Survey (USGS). The service automatically collects, summarises, and maps tweets to give a quick overview of what people go through during an earthquake (Sandoval-Almazan and Gill-Garcia, 2011). The use of social networking applications for communication with citizens during emergencies and also to receive information from citizens during a disaster demonstrates potential benefits for government agencies to adopt the tools.

Bertot et al., (2010) suggest that promoting the widespread use of social media technologies should ensure, that these technologies are inclusive and available.

It is a common fact that citizens around the world have shown low levels of trust in the government. However, findings from Song and Lee (2013) showed that governments increased interactions through social media is a worthwhile effective way to improve government agencies transparency with citizens, leading to citizens increased trust in government. This is supported by Hong (2013) who found that citizens who used social media to interact with governments were likely to trust governments at local and state levels.

The potential of social technologies and Web 2.0 tools depend on the level to which governments use these applications to facilitate national benefits around public services and contact with members of the public. This also involves a thorough understanding of the tools and applications to utilize them to full potential.

### **2.7.3 The demand –side of social media in government and the interaction of citizens and public authorities using social media tools and applications**

Various academic literature pay considerable attention to the demand for web 2.0 and social media to be used in government has many justifications. Firstly, web 2.0 technologies can significantly provide opportunities for participation among citizens. Social media as an internet technology can offer a cost effective approach to reach a wider audience such as the ability to

announce a society issue nationally in a matter of hours or even minutes. It can also influence public opinion based on any government agency changes that may affect their country or local areas.

A study outlined by Ferro and Molinari (2010) suggest that in terms of web 2.0 revolution, there are a number of tools that are available to public sector organization. Therefore to elaborate further on these tools, new trends regarding web tools and social media for government organizations can offer benefits that governments will find interesting.

The demand side of social media concentrates on citizen empowerment and engagement, the benefits and impacts for the societal changes. Social media and Web 2.0 tools can ensure that citizens, business agencies and other stakeholders are involved into a strong openly participative and empowering interaction with government organizations, particularly in areas such as decision making and service delivery.

Kuzma (2010) presented three key categories of benefits that governments can have from utilizing web 2.0 technologies and tools. These three essential categories are: Efficiency in the relation of obtaining enhanced output with the least resources; User's convenience, which suggests that a user can search and access their requirements anytime and from anywhere. Lastly, citizen's involvement to signify the enhancement of citizens' participation levels within democratic development.

As e-government plans indicate a move toward a citizen centered approach to e-government services, it is important to recognise citizen centric and the focus on social media users' needs which will be relevant to e-government use (Nam, 2014). Therefore the demand for social media in e-government should entice all stakeholders involved in the proposal, of the ease of use, convenience and good usability of social media. In terms of government agencies, they should not view the tools as another daunting internet technology that has to be learnt and used as an ad hoc services; and in terms of citizens that the service provided by e-government agencies on relevant social media tools that promote interactive access to them where they can engage in a two way communication in real time. Finally, governments should recognise that social media

users are the ones that enjoy being informed via various platforms; thus using Web 2.0 tools to engage with more citizens do not need a costly investment in the new e-government development (Nam, 2014). By using social media, governments can upgrade contents for concerned citizens to be broadcasted on several relevant social media technologies in keeping citizens informed on a daily basis. This new migration does not require much effort from the government as the technologies are already set in place and only need to be maintained.

#### **2.7.4 The Limitations and challenges of social media and in the government**

The adoption of social media has raised concerns over the challenges and limitations that e-government will face. Therefore, it is crucial that these challenges are identified and addressed

The risks which include isolation, exclusion, violation of privacy, misuse of information and security threats; would benefit from a wide-ranging policy framework to serve as a solution for government organizations in providing instructions for use of social media in governers (Roy, 2014).

Bertot et al., (2010) maintains that the digital divide encompasses multiple divides mainly to do with the need for users to be able to understand and use the technologies where transparency tools are available. Furthermore the digital divide comprises of multiple divides which include usability (See fig. 7 for a summary).

<b>Digital Divide Issues</b>	<b>Features</b>
Technology Literacy	The ability to understand and use technologies
Usability	The design of technologies in such ways that are intuitive and allow users to engage in the content embedded within the

	technology
Accessibility	The ability of persons with disabilities to be able to access the content through adaptive technologies (there are some mobile technologies such as the i-phone are completely inaccessible to persons with visual impairments due to the touch screen design which lacks a tactile keyboard)
Functionality	The design of the technologies to include features (e.g., search, e-government services tracking; accountability measures, etc.) that users desire.

**Figure 7: Digital Divide Issues for social media**

Therefore, it is vital to both use technologies that are widely deployed to provide a broad base of technology access, but there is also an extensive need to provide training, and engage in usability, functionality, and accessibility testing to ensure the wide-ranging ability to participate in e-government services and resources. It would be then useful for social media to cater for transparency initiatives that can create new opportunities and new challenges.

Other risks and challenges include exploitation and violation of privacy and exploitation of free labour for advertisement gain and fear of increased corporatization of online social networks and collaboration spaces and outputs. Social networks sites that depend on search engines in gathering personal information may create a threat to information privacy. The challenges related to e-government context that Osimo (2008) outlined in his study, are still issues that still remain today.



### **2.7.5 Future Implications for Governments**

The adoption of Web 2.0 brings many potential benefits in E-government. The collection of enriched communication and interactive usage enables social media to offer various crucial opportunities for government employment of the technology. For social media initiatives to be deployed in government settings, there are some key factors that need to be considered:

- For social media to be experimented by local councils, they must set objectives for what it hopes to achieve. This will assist in the selection of the most suitable social media platforms
- Government organizations need to know who is responsible for posting information and responding to messages and time needs to be allocated to them for these tasks. If social media is seen as part of one employees job description, then it will be likely to be taken seriously across government agencies
- Prior to creating profiles on Facebook, Twitter, YouTube or other services, it is worth experimenting in a low – key way to develop a feel for how those platforms work and the ways that users interact with them. Observing the types of messages and information that are being posted and looking at the discussions that take place online help develop an understanding of what people value
- According to Fox (2010), where applicable, government agencies should try and portray a personal touch into the information and messages that are posted. Citizens will not be interested if they just post press releases onto Twitter or Facebook. Conversely, posts that show a genuine concern by local government officials for the services they provide can break down barriers. This does not need to be applied to all circumstances as sometimes a simple information broadcast is more suitable such as travel updates or bad weather warnings
- Local government officials should not be too prescriptive as it is important that they set out some broad guidelines for what is and is not suitable as subjects for posting online as well as expectations in terms of style and tone
- Local councils should monitor the success of social media advantages by using free tools such as Hootsuite for tracking Twitter postings. It is important to know which schemes

are providing the most interest so efforts can be emphasised on those and away from activities that are not working (Kaushik, 2009)

## **2.8 Summary of Literature Review Analysis**

From the analysis of the literature, and in answering the various questions, a diverse and acceptable number of papers focused on the underlying idea of Web 2.0 functionalities whilst the usage and essential characteristics of social media received the most empirical attention, according to the review. In relation to the basics of Web 2.0 technologies, the findings indicated that, the common set of functionalities that are relevant in its functioning of internet enabled web as the significant platform alongside end-user interactivity use of a client-side programming framework such as Ajax, Adobe Flash and HTML5, and server - side programming such as Atom, RSS and XML. The Web 2.0 functionalities also include web services, not software applications, and provide web content Rich Interaction Application (RIA) experiences for the end users. The technologies also support data to retrieve information services such as searches, linking, tagging, authoring, extensions, signals and recommendations.

Within the papers focusing on the characteristics of social media, there was an adequate amount of studies and the analysis identified four main structural characteristics: user generated social content, social networking, collaboration, and cross-platform data sharing. Within the findings on the characteristics of social media, it highlighted a broad nature of social media characteristics in the systematic review. There are various studies comprising different types of social media uses. (Kaplan & Haenlein, 2010; Douma, 2011; Kietzmann et al., 2011; Lai et al., 2012; Chun, 2012; Kim et al., 2013; Bucher et al., 2013; Musial and Kazienko, 2013). Social media usage examples include enthusiast, advocates and influencers (Douma, 2011); inactives, spectators, joiners, collectors, critics and creators (Bernoff and Li, 2008); and status seeker, critic, socialite, microphone controller, lurker, buddy, creator, pundit, rebel, officiator and harmoniser (Chan, 2008).

The second research question addressed the widespread reach of Web 2.0 and social media technologies in various activities and the reasons why they are employed; similarly it looked at the relevance and significance of their use in today's society. The studies revealed that there was

a heavy focus on the widespread use of social media technologies providing users with deep and rich experience to create and exchange information on the web and collaborate with others in an interactive environment for an easier way to find and share information online. The heavy focus on the widespread use of the technologies can be explained by the rapid growth of the tools which fulfil several social communication needs (Ishak, 2012).

A number of articles concluded that the widespread use of Web 2.0 and social media technologies in various activities is based on social media tools allowing users to use human networks in an interactive environment rather than broadcast communications. Finally users can communicate not only by text but by video, images and audio which is currently the most powerful way to communicate a two-way interactive service rather than a one-way broadcast service. No one expected the extent and impact of social media at such a phenomenal degree. Before the explosion of Facebook, Blogs were considered as the real social networks, it empowered ordinary people to use and express on any topic, issue or latest trends to a widespread audience. Likewise at one time Myspace during the year 2005-2006 was ranked higher than Google in terms of most visited site. The fact that there were over 500 million active users on Facebook in 2010 (with 70% of those outside the United States); currently Facebook has become the substantial social network globally, over 20 billion messages sent on Twitter since it emerged in 2006, and in the Asia-Pacific region 50% of the total online population browsed social networking sites during February 2010 reaching 240.3 million visitors, highlights the global and perennial nature of this phenomenon. In 2012, the Nielson Report demonstrated that at least 27 billion minutes are spent on Facebook each day. The addictive nature of Facebook is due to the convenience of tracking the status of friends. The figures reported have doubled since then with no reason to stop indicating that as for certain online social media will remain as people always want to interact and connect with other people (Ishak, 2012). This corresponds with the statistics from my findings, conducted to report on the most widely used social media platforms and the most widely used social components.

The third research question addressed the issue of how social media emerged and developed over time. The analysis of the literature demonstrated that there were a moderate number of papers focusing on the history and development of social media technologies. The five studies for the

history and components of social media discuss the earliest form of social media communication tools in the 1970s such as e-mail and technological Internet platforms like bulletin board systems; the 1990s saw the growth of homepages and corporate webpages, as well as e-commerce which launched Amazon and eBay (1995). Therefore the current trend toward social media can be seen as an evolution from the roots of the internet which transformed the World Wide Web from Web 1.0 which was known as the read only web with formal exchange by users throughout the 1990s. The user generated web, known as Web 2.0, continued to popularise the worldwide web from 2005 onwards. The articles all reported on the same theme that social media and web 2.0 facilitates the interactive platforms to share, collaborate and exchange information more easily. It is also known as the read/write web as the major components of social media include blogs, social networking, microblogs, RSS feeds, wikis, video sharing sites, bookmarking sites, mashups and folksonomies, audio and photo sharing sites.

The much debated topic for the definition of social media is whether web 2.0 forms that technological paradigm of social media or whether it forms the earlier technical advances of communication systems in the 1970s. On the contrary the debate in the limited research available argues the difference between social media and social networking. Within the papers, the analysis identified that social media describes various forms of media content created by end users which are publicly available; whilst social networking is a tool for connecting with others and building relationships through a community. Given the broad nature of social media, its history and development is relevant for the impact of social media research and because technology is rapidly growing and changing, it is a topic that requires ongoing research. This is because the assorted history of social media studies needs to look into social media applications and technological dimensions in more detail in order to understand and present a precise and pragmatic study of the development and evaluation of the phenomenon of the social media, rather than social networks alone.

To answer research question four, the analysis identified empirical studies focusing on various classifications of social media technologies and users. The history and development of social media illustrated that the tools exist for both fields of interest and numerous target groups.

Within the literature review, the identified articles demonstrated sparse but varied classification of social media tools. There seems to be an increasing concern about how social media can be classified and to an extent their grouping is based on criteria such as their internet purpose and function and the communication channel between members exchanging resources. The main classifications of social media were: communication purposes (Bloggers, Twitter), social networking (Facebook, LinkedIn, Google+), archiving and sharing (YouTube, Instagram, Pinterest), collaboration (wikis, virtual worlds, slideshare) and discussion (Internet Forums).

The fact that there are so few papers on the classification of social media technologies is interesting. A possible explanation is that social media is significantly diverse, dynamic and still growing; it is too early and uncertain to determine the taxonomy of social media technologies. As social media can be divided into several groups based on different criteria, it is evident that research attempting to typecast social media cannot agree on a clear, robust set of classifications due to their fluidity.

Social media has come a long way since the day the first email was sent out and the introduction of the BBS to the photo sharing media site Instagram. The growth of mobile social media has also leveraged the power of smartphones and the growth of social media. However, due to competition and the change of business and technology market, most social media sites have closed (See Table 3 for a timeline of social media launches by year).

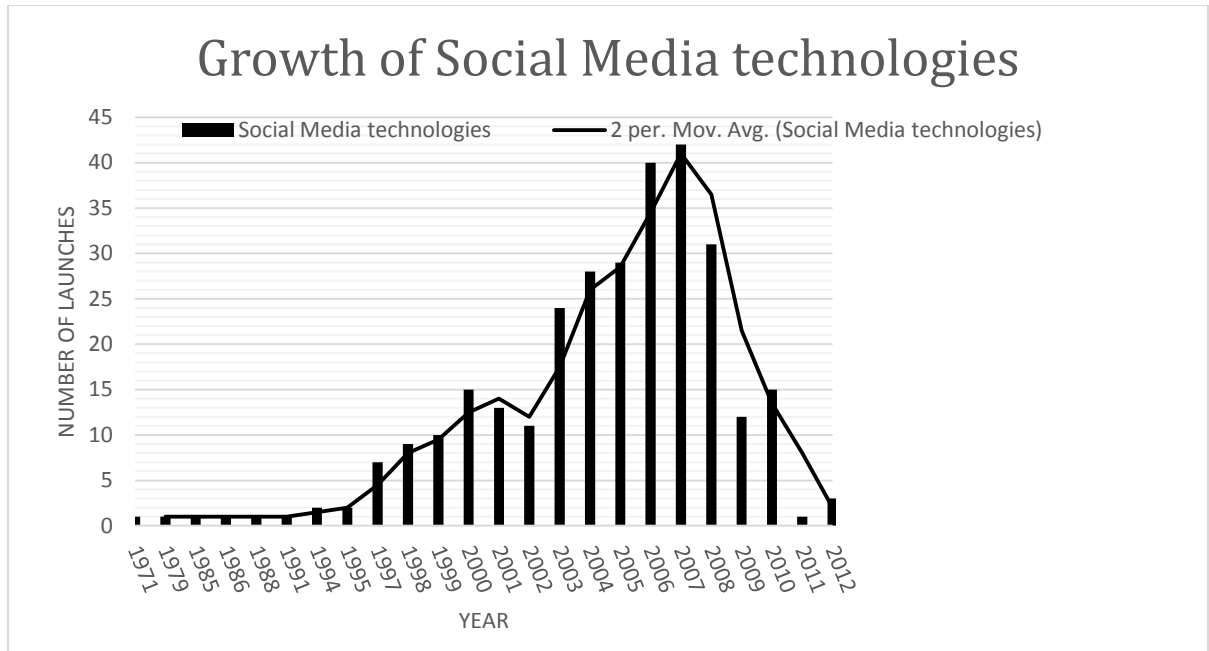
An emergence rate graph in Fig. 8 shows the emerging social media communication channels and the technological changes such as internet based platforms, web and mobile technologies. Looking at the graph, the maximum growth rate was 2007, this can be explained by the emergence of content generated sites such as Tumblr and the widespread use of mobile devices with specific web 2.0 applications to distribute content such as creating profiles to search and join groups with similar interests.

<b>Date</b>	<b>Launches of Social Media</b>
<b>1971</b>	first email
<b>1979</b>	Usenet
<b>1985</b>	Whole Earth 'Lectronic Link (WELL)
<b>1986</b>	LISTSERV

<b>1988</b>	Internet Relay Chat (IRC)
<b>1991</b>	World Wide Web
<b>1994</b>	first personal blog, Geocities.com
<b>1995</b>	Classmates.com, TheGlobe.com
<b>1997</b>	SixDegrees.com, AOL instant messenger, weblog, Hotmail, CaringBridge
<b>1998</b>	GOOGLE, AsianAvenue, MiGente, BlackPlanet, Xanga, Care2, Open Diary, Fotki
<b>1999</b>	<u>LiveJournal</u> , blogging, epinions, Cyworld, Kiwibox, HR.com, Napster, VampireFreaks.com, HR.com, Advogato
<b>2000</b>	Wikipedia, LunarStorm ,Faceparty, Trombi.com, MouthShut.com, Habbo, FriendsReunited, deviantART, IRC-Galleria, HospitalityClub, Faceparty, dol2day, Playahead, Playlist.com, WorldFriends
<b>2001</b>	Ryze, MyOpera, Partyflock, StumbleUpon, OneWorldTV, CozyCot, Athlinks, Frühstückstreff, Decayenne, Meetup.com, OneWorldTV, Wasabi, MiGente
<b>2002</b>	Friendster, Skyblog, Fotolog, FilmAffinity, Hub Culture, Elftown, MyLife, Skyrock, iWiW, Travellerspoint
<b>2003</b>	MySpace, Delicio.us, WordPress, SecondLife, Photobucket, Hi5, LinkedIN, Plaxo, CouchSurfing, Tribe.NET, JAIKU, OUTeverywhere, XING, MyHeritage, WAYN, Nexopia, DontStayIn, LifeKnot, Last.fm, Netlog, GaiaOnline, WAYN, itsmy, MEETin,
<b>2004</b>	FaceBook, Flickr, aSmallWorld, Hyves, BiggerPockets, Digg, Catster, Ning, Care2, Piczo, Dodgeball, Mixi, Multiply, Dogster and Orkut, Podcast,Windows Live Spaces, Tagged, Viadeo, Draugiem.lv, Grono.net, Zoo.gr, Taringa!, Cloob, Faces.com, Yelp
<b>2005</b>	YouTube, Bebo, Yahoo! 360, Reddit, Xano, Blogster, douban, Gather.com, LibraryThing, Renren, Buzznet, MocoSpace, myYearbook, StudiVZ, Qzone, douban, myYearbook, StudiVZ, Renren, Buzznet, MocoSpace, Stickam, TravBuddy.com, Focus.com, Gather.com, Biip.no, MOG, Ning
<b>2006</b>	Twitter, Flixster, Sonico.com, Geni.com, weRead, ibibo, fuber, SocialVibe, JammerDirect.com, Fabulously40, Stylehive, MyChurch, Ustream, Justin.tv, OneClimate, Shelfari, Goodreads, CafeMom,

	Badoo, Muxlim, aNobii, Crunchyroll, Eons.com, GamerDNA, Nettby, VKontakte, Odnoklassniki, Nasza-klasa.pl, Tuenti, CafeMom, ReverbNation.com, italki.com, GamerDNA, MyAnimeList, Listography, Nettby, Vox, Wattpad, WebBiographies, Wer-kennt-wen
<b>2007</b>	Tumblr, Osmosus, GlobalGrind, FriendFeed, Zooppa, Cake, FledgeWing, Quchup, Mobikade, Teachstreet, DailyStrength, Wakooopa, WiserEarth, kaioo, NGO Post, Financial, Disaboom, Epernicus, Experience Project, FledgeWing, InterNations, LinkExpats, mobikade, Pingsta, Quechup, SciSpace.net, TeachStreet, Virb, Sonico.com, Geni.com, Livemocha, weRead, ibibo, Cellufun, BigAdda, fubar, Ravelry, SocialVibe, Indaba Music
<b>2008</b>	Spotify, Kontain, Ping.fm, Social Life, cross.tv, Academia.edu, MUBI, Avatars United, ScienceStage, Taltopia, Youmeo, Gays.com, FetLife, Present.ly, ResearchGate, Identi.ca, Avatars United, GovLoop, Kaixin001, Lafango, MeettheBoss, Plurk, Raptr, ScienceStage, TalentTrove, Talkbiznow, Xt3, Yammer
<b>2009</b>	Posterous, Netlog, Bingbox, Foursquare, DailyBooth, WeOurFamily, Hotlist, ShareTheMusic, WeOurFamily, Explorer, Qapacity, gogoyok
<b>2010</b>	Sportpost.com, Pinterest, Instagram, Google Buzz, Ask.fm, WeeWorld, Blauk, FitFinder, folkdirect, Audimated.com, Passportstamp, Fedreated Media's BigTent
<b>2011</b>	Google+
<b>2012</b>	Pheed, Vine, Snapchat

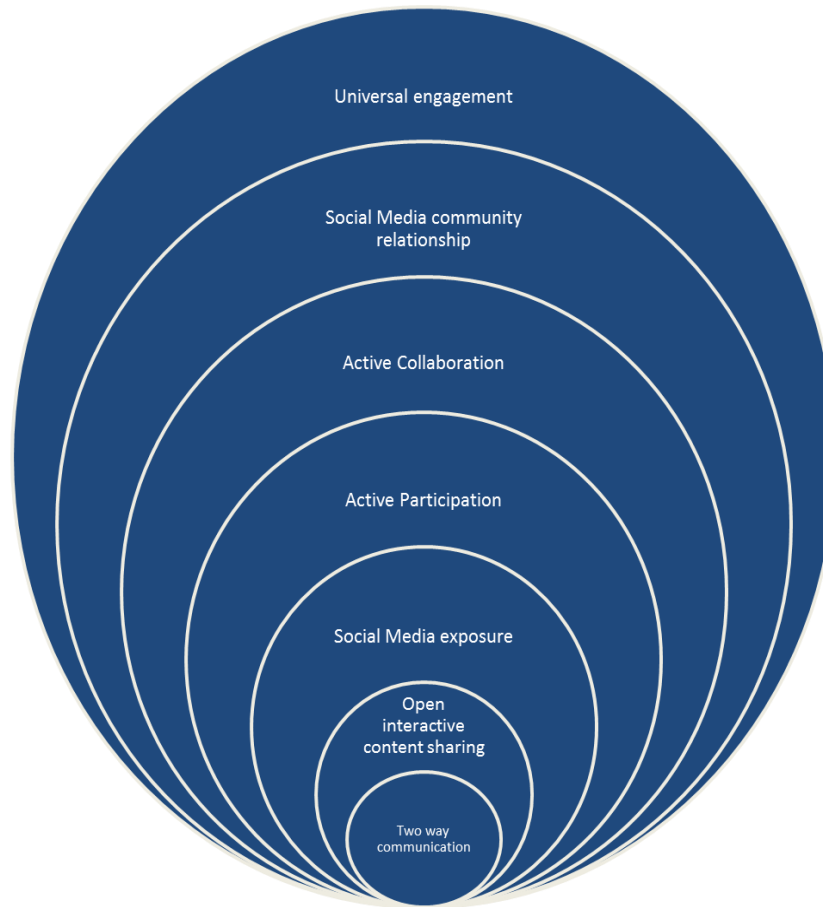
**Table 3 Chronology of Social Media**



**Figure 8: Launches by Year social media technologies**

As a result of this review, seven main layers of social media factors to facilitate benefits of social media are identified. Fig. 9 illustrates a conceptual framework of social media benefits. The framework has been developed for the evaluation of beneficial approach to social media utilization of emerging trends by e-government but can be adopted to help other industries. It focuses on the crucial innovations and implications that exemplify these evolving advanced methods by using social media in government services. Appendix A.1 details the full benefits of future social media communications in government settings from the conceptual framework evaluation.





**Figure 9: A conceptual framework of social media benefits**

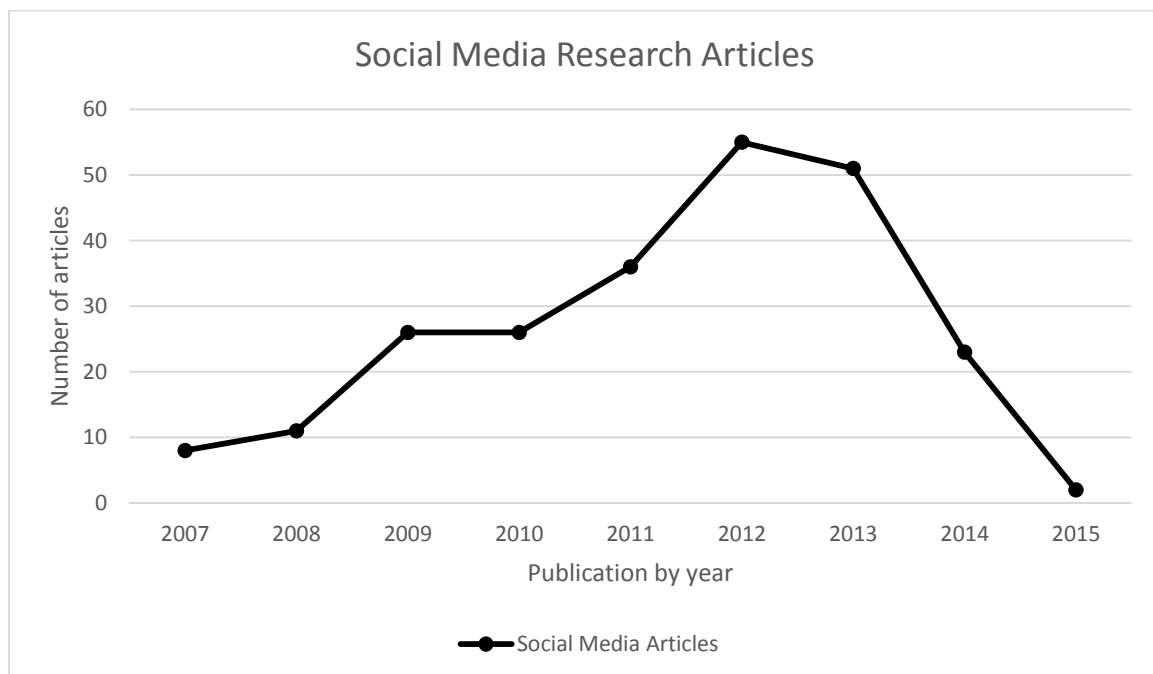
Assessments of social media scholarly publications provide insights of research topics, the connection between topics, the nature towards the exertion of research, and also the perception on social media as a field of study (Table 4). Fig. 10 shows a timeline of publication by year social media articles; looking at the graph, there was a sudden increase of interest with social media articles in 2012 but less attention to Web 2.0 technologies and social media in 2014. Moreover, the review demonstrated the most popular social media platforms from March 2014 with the monthly unique visitors of each platform as illustrated in Fig. 11 highlighting that Facebook is the world's leading social media site.

There are many areas that social media technologies have been applied to and have gained benefits from engaging with social media. These include education, healthcare, government, business, science and technology, finance and social and political. For the purpose of this research the focal point of study will be social media in government. Thereby, this study both

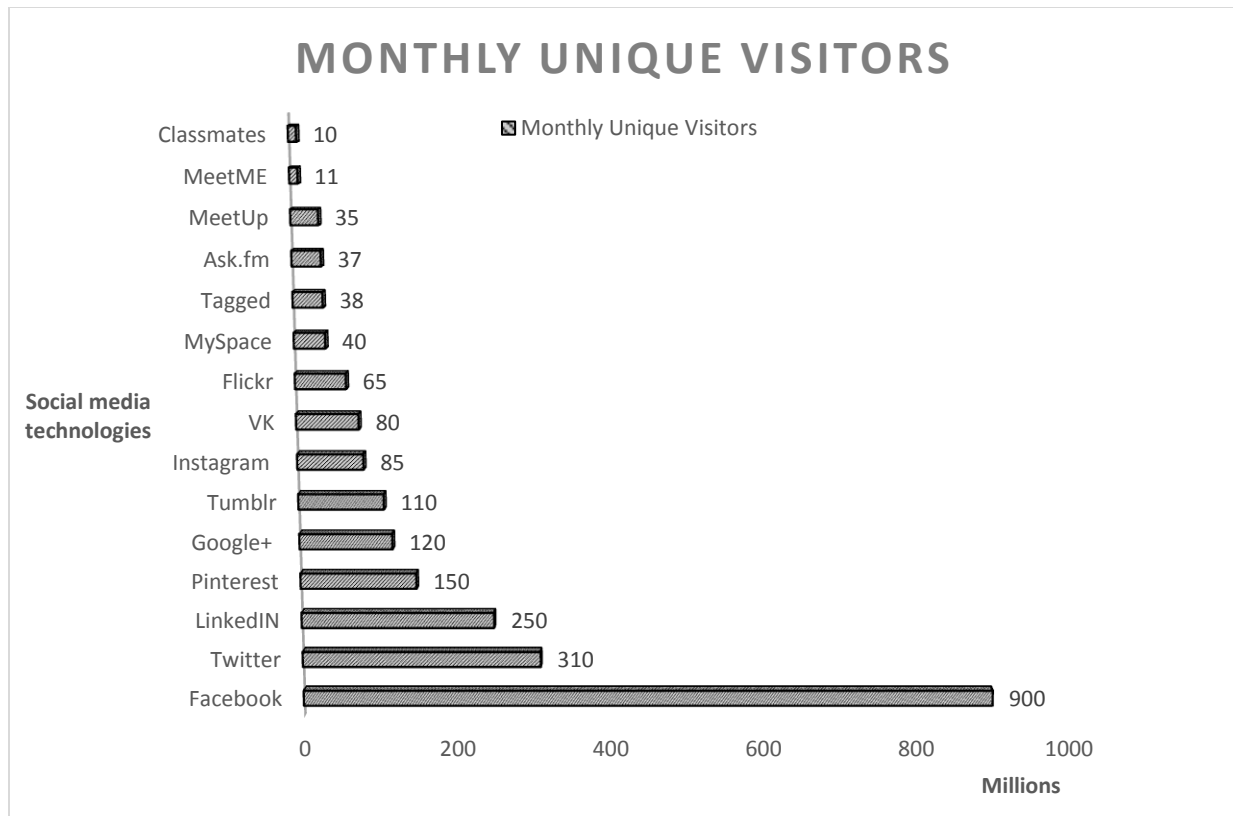
analyses scholarly publication where exact research is aimed towards the environment of social media technologies and sites.

Social media number of articles	Publication by year
N= 8	2007
N= 11	2008
N= 26	2009
N= 26	2010
N= 36	2011
N= 55	2012
N= 51	2013
N= 31	2014
N= 2	2015

**Table 4** Number of social media articles



**Figure 10:** Publication by year timeline of social media articles



**Figure 11: Monthly Unique visitors of popular social media site**

### 2.8.1 Summary of social media and e-government

In answering research question six, the phenomenon of social media has shown that it presents several opportunities for many organizations to communicate and interact immediately. Additionally, numerous studies have documented how social media and Web 2.0 technologies are currently being used in e-government and the potential impact it has to transform government organizations. The identified articles demonstrate a limited but varied use of social media in e-government settings. The study confirmed that globally, the UK central and local government and United States central and regional government and European central and Asia central government are using social media sites. The majority (80%) report that government related bodies tended to use Twitter, YouTube channel, blogs, mash ups, RSS feeds for updating users on new content, Wikis for collaborative data sharing and Facebook to promote their organizations and public image and to provide information to citizens 92.5% have adopted Facebook, 86.7% have adopted Twitter, 74.7% have adopted YouTube, 20.2% use blog and only 15.7% have adopted Flickr; RSS feed 73.3%.

Although exciting and despite the benefits, these findings suggest that government organizations are utilizing social media at state and local levels for full active engagement. The study also revealed that although the organizations have social media accounts, the majority of the time their full presence on the platforms are spontaneous rather than planned when social issues become a nationwide concern, for example the widespread tweets that were sent during 2011 riots in England (Panagiotopoulos et al., 2014).

The empirical analysis presents encouraging findings that support evidence that a large majority of governments are using social media and some agencies generally respond to the public's specific expectations.

From the analysis focusing on risks surrounding social media on the control of information and legal, security and privacy risks, research indicates that having established laws and regulations on social media use for information to remain secure and to prevent privacy invasion can improve communication and trust in the open use of social media. Looking at the various studies addressing challenges and risks within social media technologies, there was heavy focus on the digital divide. This can be explained by social media researchers focusing on the technological and digital illiteracy impacting the understanding of the web and social networks. For this issue there are a greater number of peer-reviewed papers than empirical studies. The main concepts that the identified articles demonstrated were the ability to bridge the gap between individuals who enjoy access to the Internet in order to use social media and those who do not. Those who are not online users consider that the internet is difficult to access and the challenge remains that they would similarly find social media difficult to use and consider that the internet has no relevance for them.

These challenges and limitations should not discourage government agencies from fully adopting social media technologies in order to provide a better service to citizens and society.

The final research question addressed the future focus of social media. The semantic web for social media in Web 3.0 generation received most attention according to the reviews. Web 3.0

enhances users' ability not simply to be more active and participative on social media but also to create and share content that they want, when they want it. The Web 3.0 generation also enables social networking sites to explicitly represent social information.

Although the literature review identified many studies on Web 3.0 technologies, only a handful of studies have discussed Web 3.0/semantic web evolvement in social media.

Web 3-D was included in findings which address the opportunity to interact on social media platforms for Facebook, Twitter, Google+, LinkedIn and YouTube, and in a virtual world as the Avatar on behalf of the user, which is more engaging and collaborative on a global scale. It was partially expected that there would not be many articles discussing exactly how Web 3.0 enhances the experience of social media as different researchers have different approaches and opinions as to the future of Web 3.0 (Kumar, Novak, Tomkins, 2014; Nath, Dhar, Basishtha 2014). As the scholarly studies in this report have demonstrated, Web 3.0 is either seen as the semantic web or a series of combined applications that are more personalised, accurate and intelligent and can be run on any device and be readable by both machines, and humans.

In terms of e-government, Web 3.0 offers a range of opportunities including a smarter, networked, and integrated government known as Government 3.0 for an integrated virtual state where citizens would be assisting governments to identify problems in any area whilst engaging in a public collaboration to make decisions and develop solutions in the use of crowd sourcing. They can even use their cars and mobile phones, and sensors that are implanted in computer devices to collaborate with other citizens and all levels of government organizations which can increase citizens' trust in e-government (Gill-Garcia, 2012).

## **Chapter 3: Methodology**

The research method utilized in the study was systematic review. This was achieved by research questions, identifying research, selecting studies, assessing the quality of each study or report, synthesising the findings from individual studies or reports in a unbiased way, interpreting the findings and finally presenting a balanced and impartial summary of the findings with due consideration of any flaws in the evidence. Processes for a systematic review were investigated for useful strategies to employ in this study. It has been suggested that exhaustive searches are imperative however they need to be quality controlled for relevance and rigour (Featherstone et al., 2015). According to Higgins and Green (2008) ‘Cochrane Handbook for Systematic Reviews of Interventions’ there are 8 stages of the review process.

### **3.1 Formulating the review question**

The first stage involved defining what topics need to be reviewed and at this stage it was important to be as specific as possible (Gough et al., 2012). This stage also allowed the researcher to define the review question and title. For the purpose of this study, the topic to be reviewed was social media, and this included the history, the different tools and applications, the characteristics and functions of social media and the emergent technologies and future trends surrounding it. The next process explored the various sectors social media would impact, and therefore the public and private sectors selected included Technology, Business, Health and Government. The outcome resulted to specifically focusing on social media and government and defining the review questions and title listed in section 1.

### **3.2 Defining inclusion and exclusion criteria**

According to Pucher et al., (2013) the second stage of the review involved deciding which studies to include and which to exclude. It started by identifying methods for literature searching, data extraction, and analysis as a way to minimise bias before beginning the literature search. This was followed by identifying keywords and search terms (see fig. 2 in appendix B.2) and general keywords in the search were used in order to recognise as many relevant papers as possible. Inclusive search strings such as synonyms i.e. including different search terms

meaning social media (such as social media, social networks, web 2.0, e-government, government 2.0 or e-governance); free-text search; filters to only include randomised controlled categories related to the search terms; Booleans search strings e.g. AND, OR, NOT, (), “” ;and exploded MeSH to search for subject headings and to help identify all articles in a database that may be relevant to a review (Fig.3 in appendix B.3). This stage also consisted of identifying published versus unpublished studies and the sources that would be helpful to retrieve relevant studies.

### **3.3 Developing search strategies and locating studies**

This stage comprised of developing an ideal search strategy to balance sensitivity with specificity i.e. retrieving a large proportion of relevant studies to social media and e-government and retrieving a low proportion of irrelevant studies as in social media in governmental schools.

The search also included several relevant electronic databases (See fig.4 in appendix B.4). Finally other strategies were employed including checking article reference lists, hand searching key journals, library searching of books, using the search engine ‘Google’, the study type of qualitative research and case studies, years of publication and accessing databases of ‘grey literature’. The researcher performed the search from January 2014 to January 2015. The search process produced 296,832 articles and this helped shape the selection stage (Pucher et al., 2013).

### **3.4 Selection of studies**

After an inclusive list of abstracts was retrieved and reviewed, the studies that appeared to have met the inclusion criteria were then obtained and reviewed fully (Hemmingway and Brereton, 2009). Various matrix tables were drafted to keep a log of all reviewed studies and the reasons for inclusion and exclusion (see fig.5 in appendix B.5). The stage also consisted of identifying any risk of potential bias in the articles that were selected. Finally the studies were screened to remove some of them by entering them into Endnote which highlighted the duplicates. As the selection process was completed by one single researcher, the process extended the time period for completing a first and second stage screen, for instance for the first screening, the researcher had to screen for titles and abstracts based on the research question and the outcome to be studied.

### **3.5 Extracting data**

The fifth stage of the systematic review involved creating a data extraction table to help the researcher organize the information from the reviewed studies as suggested by Gough et al., (2012), for example publication title, author/s, year, findings (See fig. 6 in Appendix B.6). The researcher also had to categorise the articles and sources that will be included for data extraction whilst trying to avoid data entry errors such as selecting sections in articles that had similar studies and to minimise any potential bias by them. It was also important that the researcher selected articles that had similar topic areas. This stage also incorporated the task of removing duplicates and any that were clearly not related to the subject of social media and e-government and this reduced the total to 102,563 articles. Following this, the researcher examined the abstracts of these articles and excluded the following studies that:

- did not focus on knowledge concepts and facts towards social media, mobile social media and social networks
- did not give a comprehensive study of the past, present and future study of social media
- did not focus on Social media and E-government
- did not focus on E-government, M-government and Web 2.0 tools
- were not conducted before 2007

Once the researcher had gone through the papers, it was decided to compare the findings. The process was conducted alone and therefore the time to achieve the task took over four months as the researcher had to ascertain whether the articles would meet the fixed inclusion and exclusion criteria to give accurate findings. This stage reduced the number of articles to 225 which was satisfactory. Next, the researcher read the full text of the articles and reduced further the number of articles to 199.

### **3.6 Assessing the study quality**

Hemmingway and Brereton (2009) suggest similar strategies for assessing study quality. The questions that were outlined in section 1 were created to allow the researcher to extract the data consistently. The studies that were selected were assessed by using a checklist that identified the strengths and disadvantages of the empirical studies. The checklist (see fig. 7 in appendix B. 7) was developed to evaluate the study in terms of weight of evidence. The evidence used in the



review was based on: suitability of the research design and analysis utilized for answering the review questions in section 1

- relevance for the focal point of the study topic based on the evidence of social, economic, demographic factors that impact the focus of the study for the review question

Each study was based on the weight of evidence that was addressed in the data extraction stage.

The aim was to identify as much evidence to support the review questions that focused on:

- the evolution of social media from web 1.0 and 2.0 to 3.0 and the future implications to e-government and a deeper analyses of the functionality, characteristics and usage of social media
- the evidence demonstrating the extended use of social media technologies in various activities based on who is and who is not using social media sites, why, and for what purposes, and understanding of the long term implications of social media sites; and
- the evidence demonstrating the challenges and limitations surrounding social media and from the application of social networks in the government

The final question in the literature review focused on the review sub-question of:

- evidence of social, economic or demographic influences that aim to recognise social media users' motivations to interact with public authorities, and how this interaction can assist in improved public services

The studies were assessed by minimising the effects of publication bias by including the abstracts and unpublished reports.

The data extraction for each study was used to pull out key themes in the evidence to feature in the synthesis stage of the review process.

### **3.7 Synthesis**

The systematic review of the literature in the search strategy stage used key text search which yielded 199 studies identified for in-depth investigation. Various case studies were taken from Europe, Mexico, Africa, North America, Australia and New Zealand. The data was synthesised corresponding to the emergent themes that relate to the fundamental concepts of the review question and sub-questions in section 1 (Hemmingway and Brereton, 2009; Gough et al., 2012).

The following themes for this study were:

#### **Social Media from Web 1.0 to Web 4.0**

Various insights into the web surrounding social media and exploration of the application in Web 3.0 and beyond. These include Web 1.0 Web 2.0, Web 3.0 and Web 4.0 generations.

### **The impact of Social Media in various activities**

A large number of studies have explored social media communication tools in the background of the earliest technological Internet platforms and in the context of Web 2.0 technologies. These included:

- Definition of social media and what are social media technologies
- Functionality of the tools
- The nature of social media platforms and why they are used
- Who are social media users
- Development of social media
- Classification of the tools
- Characteristics and usage

### **Challenges and limitations surrounding social media and from the application of social networks in e-government**

Research into various types of threats and challenges towards social network and the usage in e-government included: Legal issues, Challenges for using social media. Limitations of using social media & Privacy issues.

### **Social media and usage in e-government**

Studies of various factors to engage citizens with the government and a body of literature relating to various usages of social networks in the government and the impact included:

- Reviewing social media in e-government
- The role and impact
- Social media strategies
- Innovation through social media in government
- The nature of online civic engagement

## **3.8 Dataset Description and Preparation**

For the statistical analysis, this study used the publically available datasets from the Pew Internet and American Life Project survey on Americans' use of the Internet conducted by Princeton

Survey Research Associates International. The datasets were merged into one national dataset survey and each dataset was completed from December 2009 to October 2013 (See Pew Research Center, 2010, for information about the detailed process regarding sampling and data collection). All adults were surveyed on the random-digit dialling (RDD) method with a combination of landline and mobile phone connection to represent all American adults who have access to either a landline or mobile phone.

The 2009 Government Online survey reached approximately 2,200 adults; the February, 2012 search social networking sites and politics survey sample contained 2,253 adults; the Pictorial Activities August, 2012 survey included a sample of 1,002 adults; the Civic Engagement Tracking Survey was conducted in August, 2012 with a sample of 2,253 online adults; the Facebook December, 2012 survey included 1,006 adults; the Online Dating survey completed in May, 2013 had a total number of 2,250 adults; the administered July 25-28, 2013 Online Video survey consisted of 1,003 adults aged 18+ across the United States; the Anonymous July, 2013 survey had a sample of 1,002 adults and finally a nationally representative Pictorial activities survey of 1,000 adults aged 18+ was taken October 3-6, 2013. Each sample recorded age, sex, the level of education, employment status and annual household income socio-demographic groups.

### **3.9 Data measurement and analysis**

This study used SPSS, version 20 to conduct all the analyses. A series of response frequencies and measures of central tendency were conducted as well as a chi-square test to explore differences in web 2.0 photo and video tools with 0.05 as a criterion for significance. A chi-square test of independence was employed to assess the association of web 2.0 multimedia tools for sharing different usage of web 2.0 media applications on social media; a chi-square is applicable as it tests if two variables are independent of each other (Smithson, 2000). This was followed by inferential statistics such as a multivariate analysis of variance (MANOVA) to determine whether there are any differences between independent groups on more than one continuous dependent variable (Huberty and Olejnik, 2006); the test was conducted in order to examine the differences in the level of trust in government organizations at the local, state and federal level according to the importance of government agencies using social media to interact with citizens. A multiple regression was used to see the predictors of social media use, this is useful as it is used to predict the value of a variable based on the value of two or more other

variables as suggested by Sedgwick (2013). In addition, other analyses that were conducted were a paired samples t-test for the difference of two variables (Abbott, 2013); A two-way within-subjects ANOVA was conducted on the motivation to use social media tools for online civic engagement, this is preferred as it is used to measure a dependent variable over two or more time points, or when subjects have undergone two or more conditions under a random sample (Turner and Thayer, 2001); a Friedman Test for the differences in video sharing tools was conducted as this is used to compare the distributions of two variables (Friedman, 1937; Laurent and Turk, 2013). A Wilcoxon Signed Rank test is often used in studies where you compare two sets of scores that come from the same participants (Taufer, 2009); for this study it was used to examine the differences in media sharing applications from the same participants; a Pearson correlation was used to demonstrate a correlation of two or more variables to test if there was a relationship between them (Huberty and Olejnik, 2006). Therefore, for this study it was appropriate to test the relationship between age and citizens use of social media and also the relationship of the use between different social media applications. Finally, a discriminant analysis is used in research to study the relationship between a set of predictors of a categorical variable (Hastie, Buja and Tibshirani, 1995) and was conducted to predict if there would be users of social media applications in the future.

A coding scheme was used to classify how respondents indicated their answers for most of the questions in the multiple surveys. For instance the “yes” response was coded as 1 and “no” coded as 2. The other questions were based on the frequency of social media use and so the coding scheme for the answers, for example 1 was for “several times a day and 6 for “Less often”. The question for trust in (a) the federal government, (b) state government and (c) local government was measured by four options: 1 was coded as “just about always”, 2 was coded as “most of the time”, 3 was coded as “only some of the time” and 4 was coded as “never”. The extent to which each respondents trust in the level of government through by how important their presence on social media will help citizens communicate with agencies was measured by coding the “very important” response as 1 and 2 was coded as “somewhat important”. Furthermore the question for whether respondents agree/disagree with positive and negative statements for government using social media for their activities was measured using strongly agree/strongly disagree answers, addressing whether the respondent had strongly agree/strongly disagree with

two positive questions and two negative questions, the “strongly agree” response was coded as 1 and “strongly disagree” was coded as 2.

## **Chapter 4: Results**

The findings in this study are organized into two sections. The first part of the section presents the concepts and main findings from the literature review studies within the social media technologies research including use of social media in e-government (Please refer to appendix C.1). The second part of the section present statistical analysis of the descriptive and inferential results of social media usage in communication activities including online civic engagement and directed and broadcasted communications for leisure purposes. This study also used two datasets of a national survey on Americans' use of the Internet, which was conducted by Princeton Survey Research Associates International and released by the Pew Research Center. The first dataset consists of merged files of several surveys collected from 2012-2013 and the second dataset is a survey conducted in December 2009, (See Pew Research Center, for detailed information about sampling and data collection procedure).

### **4.1 Main concepts and findings of social media**

For a summary on existing papers and topic findings on social media (See Appendix C.1)

### **4.2 Statistical Analysis**

#### **4.2.1 Description of results**

From August 2012 there were 67% of online adults who use social networking sites with 57% women who use it compared to 43% men and social networking sites are common with 42% younger adults. In addition a separate analysis showed that 33% visit social networking sites and more women were likely to use it several times a day (34%) and younger adults (43%) were likely to use it several times a day. In 2013 the percentage of online adults engaging with social networking sites increased to 73%.

Facebook is the most widely used social networking platform (61%) and in regards to usage among online adults, 53% reported the amount of time they spent using Facebook on a typical day stayed about the same over the last year. In addition 61% of online adults report that the impact of Facebook on their lives remained as important as it was a year ago and 70% reported

that they expected to spend about as much time on Facebook in the next year as they do now. Among internet users, Facebook is common with younger users (86%), and 66% are women compared to 56% of men; 74% have a higher income whereas 66% are in part time employment, and some have college level education (66%).

Around 20% of online adults used LinkedIn. The user demographic included more men (20%) using the site compared to women (18%). The usage is higher among the most educated (32%), with a higher income (40%), middle age group (26%), and full time employment (26%).

Some 16% of online adults use Twitter and of those men (17%) used the site more than women (14%); those with a higher income (23%) are likely users; those with a university degree (18%), younger users (25%) and full time employment (17%) are among Twitter users.

There were 33% of online adults who used Google+: among those users 31% were men compared to 32% of women; Google+ users were prevalent in further college degrees (40%); a higher income (38%); and the older age group (33%).

Tumblr accounted for 4% of online adult users with 5% of women who used the site compared to 4% of men, younger users (9%) were higher than any other age group; those with some college degree (7%), those with a lower income (10%) and those in part time employment (5%).

Some 10% of online adults used Instagram with less women (9%) likely to use it compared to men (10%). Instagram use was common with the highly educated (postgraduate degree) (21%), those in part time employment (15%) with a higher income (18%) and younger users (18%). When it came to Pinterest 12% of online adults use the site and women (16%) are more likely to use it than men (5%), this is the largest difference in gender from all social media sites; those with postgraduate degrees (26%), in part time employment (11%), a higher income (14%) and again younger users (13%) dominated the site.

However, when it came to mobile phone use to engage with social media platforms, Instagram was the dominant platform with 79% of users, followed by Twitter (68%), Facebook (60%), Google+ (47%), LinkedIn (37%), Pinterest (33%) and Tumblr (29%).

The demographic group for each social media site is quite diverse with their own unique profile.

Online adults among Facebook include 64% of men and 56% women, younger users (79%) and interestingly enough 80% of those with the highest education engage with the application and users in full time employment (68%) and those with higher income (83%) have high levels of engagement.

LinkedIn users include 40% of men and 34% of women, younger users (43%), college and postgraduate degree (50%) and high levels of engagement include users in full time employment (40%) and with a higher income (57%).

Twitter appeals to 66% of men and 69% of women and younger users (74%), those with a higher college degree (75%), in full time employment (70%) and with a higher income (91%).

Google+ is geared towards both men (46%) and women (47%), younger users (65%), in full time employment (57%) and with a higher income (62%).

In addition, Tumblr attracts 36% of men and only 24% of women yet a high increase (67%) in the 65+ age group and online adults with a bachelor degree (50%) in full time employment (33%) and with a higher income (50%) engage with Tumblr.

Those who engage with Instagram include both men ( 78%) and women (79%), a high usage among younger users (91%), some users with a college degree (89%) and in full time employment (78%) and with a middle income (92%).

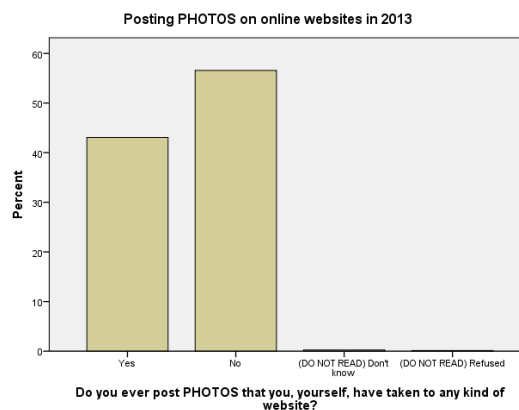
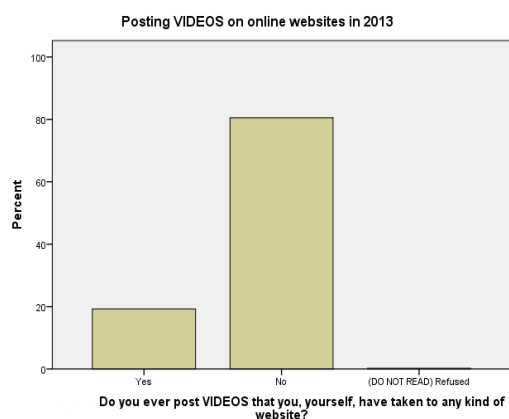
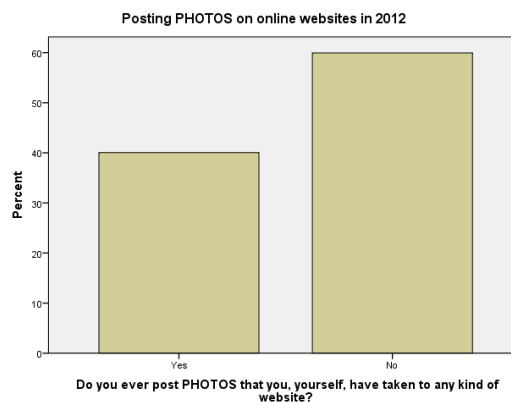
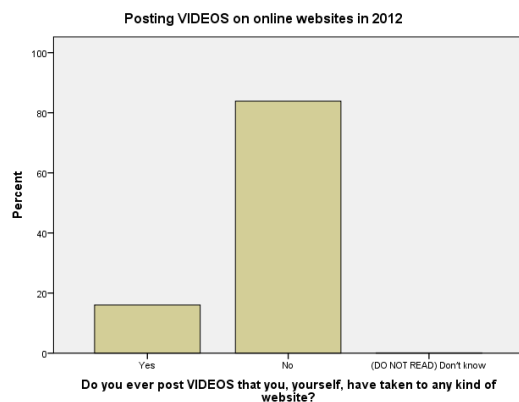
The demographic for Pinterest includes 36% of females and just 22% of men, younger users aged 18-29 (53%), those who are highly educated (60%), in full time employment (43%) and with a higher income (63%).

In this study, the most common frequency of visiting sites was several times a day (32%), followed by once-a-day (20%). Within the 32% who visit social networking sites several times a day there is a slightly higher percentage of females to males.

### **Media sharing sites**

The following graphs show the percentage of participants in the survey who post photos and videos online. (Also see appendix C.2 for a full tabulation of the results).





In relation to media tools used within social media sites, response frequencies highlight that 57% watch videos online on a social networking site like Facebook and 72% post or share videos online on a social networking site like Facebook. A chi-square test of independence also confirms that participants posted videos online on social networking sites more often than those who watched videos online on social networking sites,  $X^2(4)=48.85$ ,  $n=199$ ,  $p < .001$ .

The online video experience from a July 2013 national survey shows that 65% online adult users watch videos on a video-sharing site like YouTube or Vimeo, 42% also watch movies or TV shows through a paid subscription service like NetFlix or Hulu Plus, 48% watch videos online, including on social network sites or using mobile apps, 24% upload a video to the internet so others can watch it or download it, 15% stream video live to the internet for other people to watch and 14% watch videos online on a mobile app like Vine. Also 7% use the mobile

application Snapchat and 13% use Instagram mobile application on their smartphone (see Table 5 for full list of analyses).

Smartphone use has also driven the growth of online videos as 31% use their smartphones to record videos, 32% share or post videos online, 15% watch videos. In addition 19% of online adults use Instagram several times a day (See Table 6) and 18% of adults use Snapchat several times a day (See Table 7) and 33% use their mobile phones to interact with Snapchat. Finally 20% post or share videos online, using a mobile app like Vine.

### *Descriptive Statistics*

<i>Online Video activities</i>	<i>Frequency</i>	<i>Valid Percent</i>	<i>Mean</i>	<i>Std. Deviation</i>	<i>Total</i>
Watch videos on a video-sharing site like YouTube or Vimeo	506	64.8%	1.35	.478	781
Watch movies or TV shows through a paid subscription service like NetFlix or Hulu Plus	325	41.6%	1.60	.590	781
Watch videos online, including on social network sites or using mobile apps	378	48.4%	1.53	.598	781
Upload a video to the internet so others can watch it or download it	186	23.8%	1.78	.530	781
Stream video live to the internet for other people to watch	116	14.9%	1.88	.565	781
watch videos online, using a mobile app like Vine	78	14.3%	1.95	.811	555
post or share videos online, using a mobile app like Vine	42	20.4%	1.83	.590	207
Do you ever use your cell phone to Record videos	64	30.9%	1.69	.463	207
Do you ever use your cell phone to	289	32.0%	1.68	.467	903

share or post videos online					
Do you ever use your cell phone to	133	14.7%	1.87	.473	903
Watch videos					
Do you ever use your cell phone to	295	32.7%	1.67	.469	903
use Snapchat					

**Table 5 Descriptive video activities on social media**

***How often do you use Instagram on your mobile phone?***

<i>Frequency of social Instagram use</i>	<i>Frequency</i>	<i>Percent</i>	<i>Valid Percent</i>	<i>Cumulative Percent</i>
<i>Several times a day</i>	<i>22</i>	<i>.4</i>	<i>18.5</i>	<i>18.5</i>
<i>About once a day</i>	<i>15</i>	<i>.2</i>	<i>12.6</i>	<i>31.1</i>
<i>3 to 5 days a week</i>	<i>15</i>	<i>.2</i>	<i>12.6</i>	<i>43.7</i>
<i>1 to 2 days a week</i>	<i>20</i>	<i>.3</i>	<i>16.8</i>	<i>60.5</i>
<i>Every few weeks, OR</i>	<i>17</i>	<i>.3</i>	<i>14.3</i>	<i>74.8</i>
<i>Less often?</i>	<i>26</i>	<i>.4</i>	<i>21.8</i>	<i>96.6</i>
<i>(DO NOT READ) Refused</i>	<i>4</i>	<i>.1</i>	<i>3.4</i>	<i>100.0</i>
<i>Total</i>	<i>119</i>	<i>1.9</i>	<i>100.0</i>	

**Table 6 Frequency of Instagram Use**

***How often do you use Snapchat on your cell phone?***

<i>Frequency of social Snapchat use</i>	<i>Frequency</i>	<i>Percent</i>	<i>Valid Percent</i>	<i>Cumulative Percent</i>
<i>Several times a day</i>	<i>11</i>	<i>.2</i>	<i>18.0</i>	<i>18.0</i>
<i>About once a day</i>	<i>7</i>	<i>.1</i>	<i>11.5</i>	<i>29.5</i>
<i>3 to 5 days a week</i>	<i>4</i>	<i>.1</i>	<i>6.6</i>	<i>36.1</i>
<i>1 to 2 days a week</i>	<i>10</i>	<i>.2</i>	<i>16.4</i>	<i>52.5</i>
<i>Every few weeks, OR</i>	<i>12</i>	<i>.2</i>	<i>19.7</i>	<i>72.1</i>
<i>Less often?</i>	<i>16</i>	<i>.3</i>	<i>26.2</i>	<i>98.4</i>
<i>(DO NOT READ) Don't know</i>	<i>1</i>	<i>.0</i>	<i>1.6</i>	<i>100.0</i>
<i>Total</i>	<i>61</i>	<i>1.0</i>	<i>100.0</i>	

**Table 7 Frequency of Snapchat Use**

Online adults (43%) report that social media has inspired them to learn more about social issues because of what they have read on social media and 18% report it has encouraged users to take action on social issues because of what they have read on social media. The response frequencies also show that 77% strongly agreed that government agencies using social media tools makes government agencies more accessible, and 82% strongly agreed that it helps people to be more informed about what the government is doing. Furthermore, when respondents were asked to answer two less positive statements about government social media engagements, 43% disagreed that it is a waste of government money and 76% strongly agreed that the tools just deliver the same information in different ways. The results also indicated that citizens are using social media for civic engagement in social issues (See Table 8).

***Social Media for civic activities***

Using social networking sites for social issues	Frequency	Percent	Valid Percent
Do you currently belong to a group on a social networking site that is involved in political or social issues, or that is working to advance a cause	223	9.9	18%
Do you ever use social networking sites or Twitter to post your own thoughts or comments on political or social issues?	387	17.2	32%
Do you ever use social networking sites or Twitter to Encourage other people to take action on a political or social issue that is important to you?	376	16.7	31%
Do you ever use social networking sites or Twitter to repost content related to political or social issues that was originally posted by someone else?	388	17.2	32%
Do you ever use social networking sites or Twitter to 'Like' or promote material related to political or social issues that others have posted?	441	19.6	37%
In the last 12 mos. has there been a time when you decided to LEARN MORE about a social issue because of	507	6.4	43%

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something you read on a social network site like Twitter?			
In the last 12 mos., has there been a time when you decided			
to TAKE ACTION involving a social issue because of	219	2.8	18%
something you read on these sites?			

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**Table 8 Social activities for civic engagement**

#### 4.2.2 Inferential results

A two-way within-subjects ANOVA was conducted on the motivation to use social media tools for online civic engagement. The main effect of expressing concerns on social issues was statistically significant:  $F(1, 2, 3) = 1580.428, p = .000$ , partial  $\eta^2 = .57$ . The main effect of taking action towards civic activities or social issues was also statistically significant:  $F(1, 2, 3) = 1657.113, p = .000$ , partial  $\eta^2 = .58$ . There was a statistically significant interaction between expressing concerns on social issues and taking action towards civic activities or social issues which accounted for a large proportion of the variance:  $F(1, 2, 3) = 4353.528, p = .000$ , partial  $\eta^2 = .78$ .

**Table 9**

A two-way within-subjects Anova

Effect	<i>MS</i>	<i>df</i>	<i>F</i>	<i>P</i>	$\eta^2$	Greenhouse-Geisser	Huynh-Feldt
ExpressConcern	.484	2	1580.428	<.000	.57	.942	.944
TakeAction	.478	2	1657.113	<.000	.58	.957	.958
ExpressConcern*TakeAction	.504	9	4353.528	<.000	.78	.660	.662
Error	1.82	1208					

---

A paired-samples t-test was conducted to compare the type of users who post photo tools and video tools. There was a significant difference in the scores for photo tools ( $M = 1.58, SD = .70$ ) and video tools ( $M = 1.85, SD = .63$ ) conditions;  $t(430) = 8.12, p = 0.00$ . These results suggest that video tools are a popular and rapidly grown web 2.0 applications, specifically, the results

suggests shared video tools are likely to be utilized more than photo tools as the online social currency.

**Table 10**

T-test Results for posting photos and posting videos online

Outcome	M	SD	n	95% CI for Mean Difference		t	df
Post PHOTOS ONLINE	1.58	.687	431	-.326	-.199	-8.117	430
Post VIDEOS ONLINE	1.85	.625	431				

\*  $p < .05$ .

A Wilcoxon Signed Rank Test revealed a statistically significant difference in media sharing applications used in Web 2.0 applications. Video tools ( $M=1.82$ ) were preferred to be used more to post content online compared to photo tools ( $M=1.59$ ),  $Z= -12.70$ ,  $p<.001$ , with a medium effect size ( $r=.31$ ). This indicates that on average the video tools are more likely to be widely used.

A chi-square test of independence indicated that photos were posted online significantly more often than videos tools  $X^2(2) = 149.7$ ,  $N = 799$ ,  $p < .001$ . Of the participants, 43% would post photos on various social media sites compared to 19% of participants who posted videos on social media sites.

There was a perfect positive correlation between the age of citizens and attitudes towards using social media ( $r = .369$ ,  $n = 897$ ,  $p < .001$  two tailed). It is a small correlation: 14% of the variation is explained. This indicates that there is a relationship between the age of citizens and attitudes towards using social media.

**Table 11**

Correlation between age and citizens using social media

Variables	Use a social networking site like Facebook, LinkedIn or Google+	Age in 4 Groups
Use a social networking site like Facebook, LinkedIn or Google+	1	.369**
Age in 4 Groups	.369	1
	.000	.000

\*\* $p < .01$ . \*\*. Correlation is significant at the 0.01 level (2-tailed).

There was a significant positive correlation between YouTube and Instagram ( $r = .334$ ,  $N = 55$ ,  $p < .05$ , two tailed) and a significant strong positive correlation between Snapchat and Instagram ( $r = .324$ ,  $N = 454$ ,  $p < .05$ , two tailed). However there was a negative correlation between YouTube and Snapchat ( $r = .117$ ,  $N = 55$ ,  $p = .395$ , two-tailed).

**Table 12**

Pearson Correlation Matrix among media sharing online culture

Variables	Watch videos on a video-sharing site like YouTube or Vimeo	Use the mobile app called 'SNAP-CHAT'	Use INSTAGRAM
Watch videos on a video-sharing site like YouTube or Vimeo	1	-.117	.334*
Use the mobile app called 'SNAP-CHAT'	-.117	1	.088
Use INSTAGRAM	.334*	.088	1
	.395	.058	.013

\*\*\* $p < .001$ .

A Friedman Test revealed that the use of video sharing tools as part of Web 2.0 applications varied significantly across the three types of online video viewing and creating experience that has grown in popularity:  $\chi^2 (2, N = 747) = 378.282, p < .001$ .

Those variables that were significantly correlated with the criteria variable, social media usage were entered as predictors into a multiple regression using the standard method. A significant model emerged:  $F (1, 4, 7) = 80.164, p < .001$ . The model explains 14.5% of the variance in using social media sites (Adjusted  $r^2 = .145$ ). Table 13 gives information about regression coefficients for the prediction variables entered into the model. Gender and Age were significant predictors, with a positive relationship to use social media tools. Education and Employment were not significant predictors.

**Table 13**

Multi Regression Result of predictors to use social media tools

	<i>b</i>	<i>SE b</i>	$\beta$
SEX	-.136	.022	-6.123
EMPLOYMENT STATUS	.002	.008	.225
EDUCATION	-.009	.007	-1.331
AGE in 4 Groups	.170	.010	16.974

. \*\*\*  $p < .001$ .

A discriminant analysis was performed using a social networking site like Facebook, LinkedIn or Google Plus; and age, gender, education, employment, access to the Internet and access to Internet on mobile phone as predictor variables. A total of 6,171 cases were analysed. Univariate ANOVAs revealed that those who use social media and those who do not differed significantly on each of the four predictor variables. A single discriminant function was calculated. The value of this function was significantly different for social media users and non-social media users (chi-square = 376.97,  $df = 6, p < .0005$ ). The correlation between predictor variables and the discriminant function suggested that age, access to mobile internet and gender were the best



predictors of future social media usage. Age was positively correlated with the discriminant function value, suggesting that younger users, 18-29, were more likely to be social media users and accessing the internet on mobile was also positively correlated with the discriminant function value, suggesting that users with internet on their mobile phones were more likely to be social media users. Overall the discriminant function successfully predicted outcome for 71.0% of cases, with accurate predictions being made for 72% of social media users who would utilize the tools and 69.2% of participants who would not utilize the tools.

**Table 14**

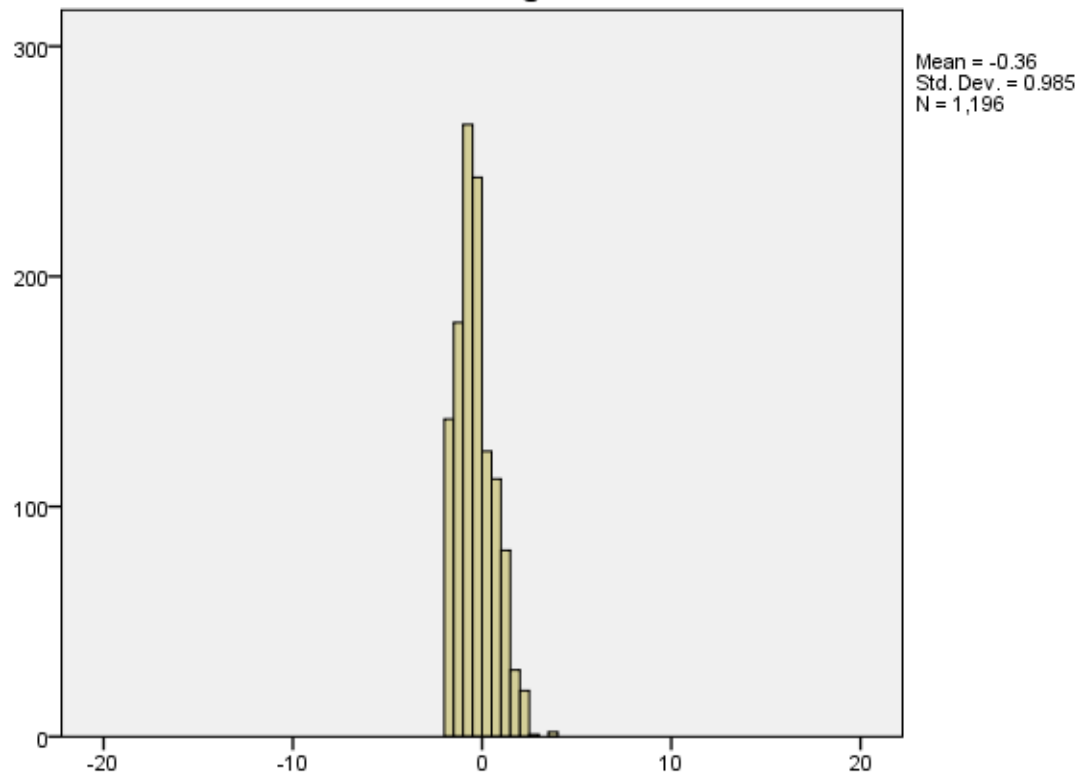
Predictors for social media use

	Wilks' Lambda	F	df1	df2	Sig.
SEX	.987	24.502	1	1870	.000
Use of Internet	.991	17.460	1	1870	.000
Employment Status	.997	5.720	1	1870	.017
Education level	.998	4.476	1	1870	.035
AGE in 4 Groups	.864	293.689	1	1870	.000
Internet Access on smartphones, tablet or other mobile handheld device	.944	110.951	1	1870	.000

## Separate-Groups Graphs

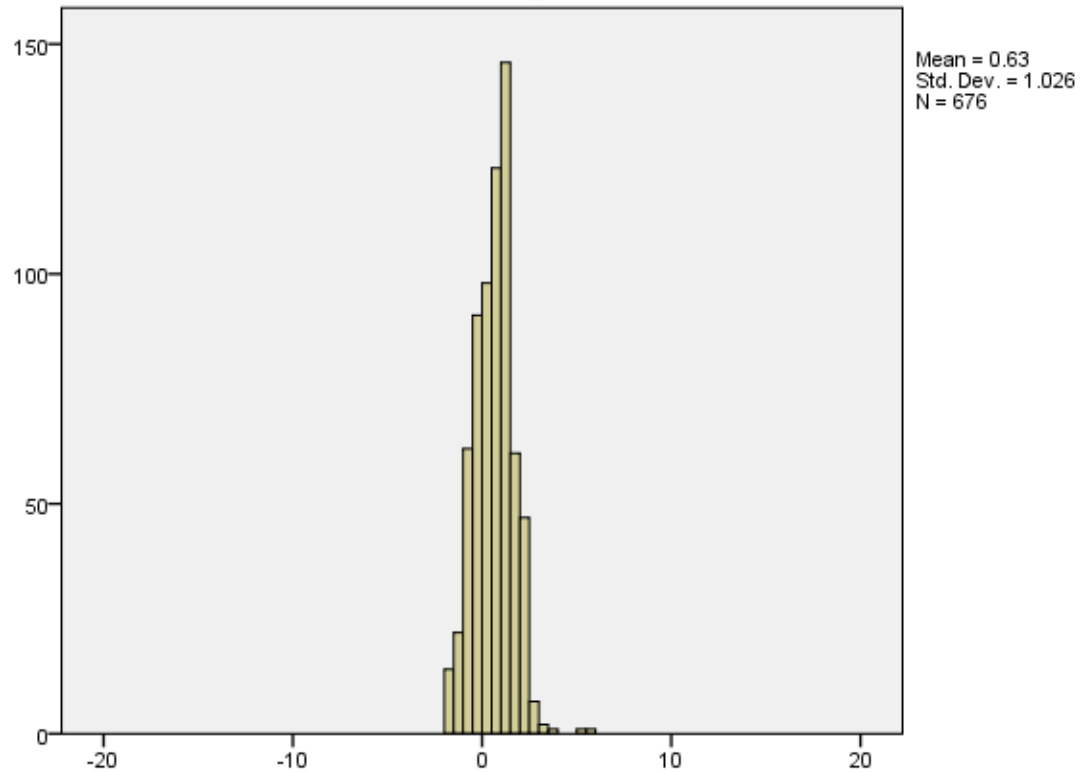
### Canonical Discriminant Function 1

**ACT87a. Please tell me if you ever use the internet to do any of the following things. Do you ever -- Use a social networking site like Facebook, LinkedIn or Google Plus? = Yes**



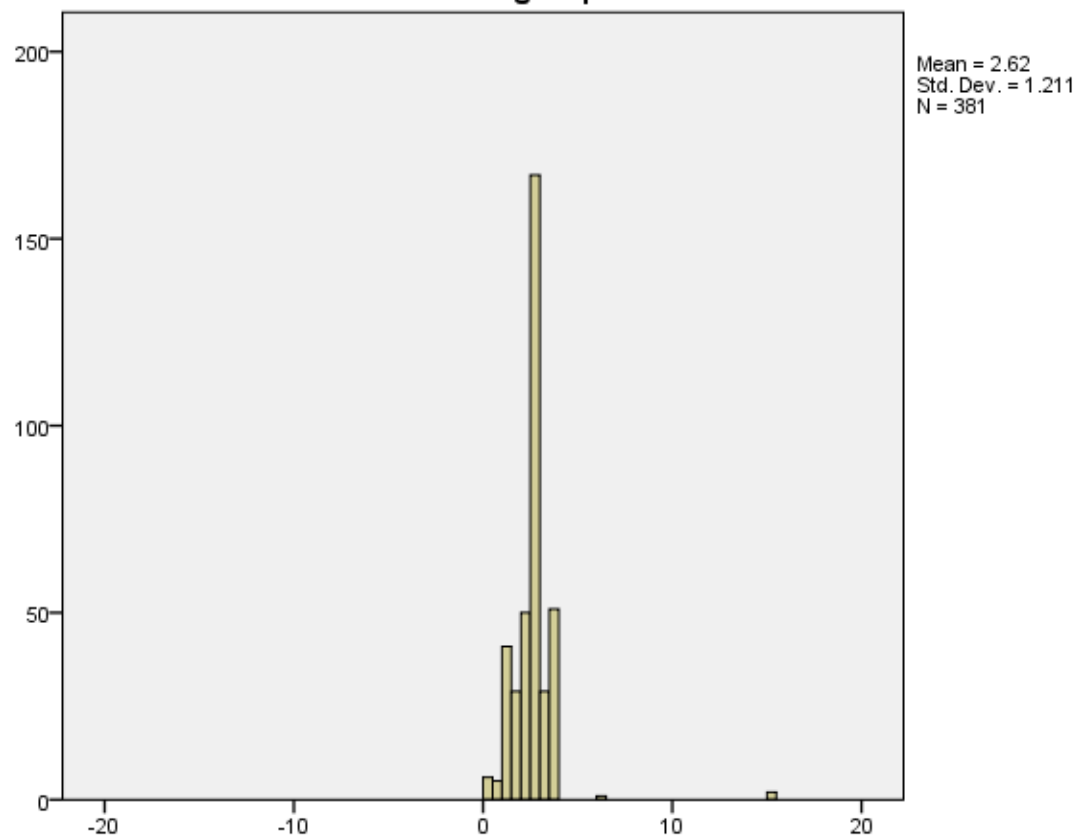
### Canonical Discriminant Function 1

**ACT87a. Please tell me if you ever use the internet to do any of the following things. Do you ever -- Use a social networking site like Facebook, LinkedIn or Google Plus? = No**



## Canonical Discriminant Function 1

### Ungrouped Cases



**Table 15**

Classification results for predicting future social networking use

			Predicted membership		Group
			Yes	No	
Use a social networking site like Facebook, LinkedIn or Google+					Total
Original	Count	Yes	861	335	1196
		No	208	468	676
		Ungrouped cases	0	381	381
	%	Yes	72.0	28.0	100.0
		No	30.8	69.2	100.0
		Ungrouped cases	.0		100.0

71.0% of original grouped cases correctly classified

## Chapter 5: Discussion

The research findings from this study show that social media usage comprises of: Increase in Multi-Platform use as online adults have two or more social media accounts; Social media sites are becoming more popular with the senior generation as Facebook is utilized by online adults 65 and over; Instagram is popular with the younger generation as half of online adults ages 18-29 used Instagram and several times a day; LinkedIn usage increases among college educated as half of internet users with a college education were using LinkedIn; and Women dominate most social media sites especially Pinterest.

To examine the classification of social media users this study empirically identified a diverse mix of demographic groups who use social media. According to the statistics in this study (2012 survey), a majority of the respondents (61%) used Facebook; women in particular liked to use Facebook. Likewise in the study, Facebook usage among 18-29 year olds is higher than usage among those aged 50-64. Moreover, the study highlights that women were the most active users on most of the social media sites, particularly Pinterest, Google+ and Tumblr, alongside younger users. In contrast Twitter, LinkedIn and Instagram usage was higher among males and 18-29 year olds. The demographic group of social media users also include college and university graduates, those with higher income and people in full time employment. More importantly, the statistics in the study presented interesting results towards the classification of social media users using mobile phones to interact with the platforms. The results demonstrated that males predominantly used Facebook, Twitter, LinkedIn and Tumblr on mobile phones and tablet; whilst the most educated and 18 - 29 age group were the most active social media users on mobile computers.

Furthermore in the study the respondents showed that taking action and expressing concern on social issues were the significant factors for using social media to interact with public organizations. The statistics also reveal the frequency of visiting social networking sites, suggesting that 43% of 18- 29 year olds visit the platforms several times a day usually to check how popular they are with people liking their feeds or tweets. This was expected as the tools illustrate the younger generation have the time, access to the Internet and the knowledge to

interact with social media tools. In the sample females were active users from Google+, Pinterest and Instagram, these sites are more suited to people who enjoy engaging in a relaxed atmosphere for personal and general interests. The results suggest that overall social media users are largely a proportion of online adults who use mobile computers.

In this sample, respondents aged 18 - 29 deemed Facebook just as important as they did a year ago. This suggests that social media users are consistent and stable with their choice of tools and are not likely to change. This is interesting as the results are the same for Facebook users aged 18 - 29 whose typical time spent on it stayed about the same; and is expected to remain the same. Looking at the statistics, it is clear that social media users are mostly general Internet users who participate in social activities. This ranges from sociable social media users who engage with it every day and see it as part of their life to meet more people and be entertained or users who are obsessed about people liking their comments by photos or retweets; to social media users who access the sites infrequently or rarely participate on social media conversations but still watch what people are saying. What is interesting is that 65 aged group are now more active on social media indicating that social media also has a positive effect on the older generation, particularly to keep in contact with family relatives. Also people who tend to use the sites for a particular purpose such as being informed about current issues or what people in their networks are doing and those who like to keep people informed by reposting an issue or by encouraging people to take action by status or tweets.

According to the statistics in this study the vast majority of the respondents (67%) used social networking sites such as Facebook, LinkedIn and Google+. In general, the results indicate a large proportion of online adults use Web 2.0 and social media tools. In particular photos (43%) and videos (19%) have become key media tools as part of the online social experience from late 2012. Additionally, this study identified that the rise of smartphones is a major contribution to photo and video tools as they have built in cameras for allowing users to easily take and share self-made pictures and videos online.

The statistics also highlighted the rise of Pinterest, Instagram, and Tumblr which has made image and video sharing easier. In the sample 10% of the respondents used Pinterest, 8% used Instagram, which is dominated by young adults, and 4% used Tumblr, a social blogging service

for easy sharing of media tools including photos, music, videos, quotes and links. In other respects, the statistics also revealed that a large majority of respondents own a mobile phone (58%) giving rise to mobile applications such as Instagram, with 18% of respondents using the application, and Snapchat, which revealed 9% of respondents using it. In this regard, the more important factor to the statistics indicate a positive contribution to the literature to show that the increasing popularity of social media sites and the growth of mobile phones have assisted in propelling the growing online video culture.

The popular rise of posting and watching online videos (prompted by YouTube) and the growth of mobile phones has allowed social networking sites such as Facebook to provide a venue for users to easily watch, record, and post online videos. The results also show 72% of respondents post videos online on social networking sites and 57% respondents watch online videos on social networking sites. This also corresponds with respondents using the social media platform YouTube (65%) to watch videos; and among adult mobile phone owners, 41% use their phones to watch a video, 31% use their phones to record a video and 32% to post videos online.

Overall, the results suggest that web 2.0 and social media tools are changing the way online adults use technology to communicate and interact in a broad range of activities which increases their social impact in the close relationships they build with other users. The growth in online videos also revealed that 48% now watch videos on social networking sites for mobile apps, 24% upload videos online for others to either watch or download, and 15% stream videos live to the Internet for others to watch.

Despite the fact that Facebook is popular across a diverse mix of demographic groups, other social media platforms have developed a demographic user profile of their own. For example, LinkedIn is popular among full time employees, which is not surprising considering the site is a professional social network aimed for connecting with other professional users. LinkedIn is also popular with college and university graduates, middle age group and online users with higher incomes. Over and above, Pinterest appeals largely to female users as the results showed that women (16%) are four times more likely to use the site than men (5%). The main idea for



Pinterest is to connect with users to share personalised experiences by photo which is a leisure activity women tend to do more than men.

On the contrary, when it came to mobile social media, Instagram was the most popular application with a demographic profile which consisted largely of younger users and a middle income and again Pinterest especially appeals to women and Twitter particularly appealed to younger users; again this is not surprising as Tweets largely consist of topics concerning entertainment which attracts conversations from younger users.

Overall, the results indicate that internet users now use multiple social media sites. What the findings do suggest is that the demographic groups' age and gender significantly impact the online adults who use and engage in social networking sites, particularly as younger users and women were dominating usage. Similarly smartphones has help propel the rise of mobile social media as many social media platforms are now accessed on smartphones which is more popular than using a desktop PC.

Research question eight aimed to answer the long-term implications of social media tools. From the analysis of literature, there were a limited number of papers focusing on the future implications around the extended use of social media. The studies in the literature show that availability of the Internet and the use and growth of smart phones has contributed to the popular rise of social media. The phenomenon of social media has become a daily routine in people's lives. The most popular social media technologies are Facebook, Twitter, Instagram, Pinterest, YouTube and Google +. Web 2.0 tools have enabled the widespread use of social media that is familiar to today's people and culture and has provided innovative ways to communicate, access, share and exchange information (Klomsri, Greback and Tedre, 2013; Field, Melakoski, Vickers, 2013).

For a future perspective, the components of social media: blogs, micro-blogs, content communities, social networking sites, virtual game and virtual social world, video, photo and audio podcasting have contributed to the evolution of word-of-mouth networks. From the facts and figures that have been reported in the literature analysis social media is daily conversation

online that is witnessed by social groups who are conversing on a technology that can easily control and influence people. Human beings enjoy communicating and sharing information with others. Social networking sites that provide web 2.0 tools such as blogs, photos, and music videos allow users to constantly update their content, which builds and explores relationships with common interests and social activities. This increases user satisfaction through collaboration among others.

To determine the long-term implications of social media tools, multiple statistical analyses were conducted to assess the potential influences of social media platforms. According to statistics in this study, the results revealed that gender and age were significant predictors with a positive relationship with social media tools. A more detailed analysis indicated that predictor variables: age, access to the mobile Internet and gender were the best predictors of future social media usage. In terms of age the prediction suggested that younger users aged 18-29 were more likely to be social media users. Accessing the mobile Internet was a positive predictor to using social media. In addition, gender was a major predictor as the results suggest that females are more likely to use social media. These predictors are the key determinants in the future users of social media. The discriminant function positively predicted that 72% of online adults would utilize social media tools in the future which is a large percentage indicating that the growth of social media technology is not likely to decrease.

There exists in the findings a positive correlation between age of online users and the propensity to use social media. Another important factor which illustrates the long term implications of social media tools is the growth of online video viewing. People currently prefer to communicate more with videos than text, as the statistics revealed that the use of video sharing tools varied significantly across three types of online video activities. This demonstrates the rapidly growing trend of online video activities for video sharing platforms, highlighting the relevance of watching and posting videos on social networking sites.

Apart from video tools, photo tools have grown in popularity as part of the media sharing experience on social media sites. This is exemplified by the rise of Instagram and Pinterest and the mobile application Snapchat. In the findings it is interesting that the users who use YouTube

are also likely to use Instagram and Snapchat. The positive correlation between Snapchat and Instagram highlights the growth of posting and sharing photos and images to communicate with other social media users. Therefore, the present study bears the potential influences of those factors on the future use of social media technologies and the consequences on online adult users and their social impact.

In general, the results in this study indicated a positive relationship with respondents who use social media tools to engage with civic activities. Supplementary to the findings the majority of respondents (66%) were active on social networking sites to take action on social issues. The most common civic activities were "like" or promote material related to social issues that others have posted (37%) and posting their own thoughts on social issues (32%).

To a certain extent, this study has shown that social media has the ability to enhance online civic engagement exemplified in Table 4.1.3 in appendix C.1. This emphasises that social media mobilizes citizens to participate in civic engagement. The extended use of social media technologies enables citizens to embrace Web 2.0 tools such as photos, videos, audio, news and images of social issues to be posted and shared on social media platforms, particularly Facebook, Twitter and Google + in order to raise awareness of these issues with the hope of spreading the message. At present, social media currently allows citizens to be involved in activism and participate in discussion of social activities. More specifically, when looking at the demographics of social media engagements the fact that engaging in social issues is prevalent among women (58%), 18-24 (53%) age group, college graduates (27%) full-time employment (45%) is interesting because it is evident that these are the demographic groups engaged in social activities or media communications.

Thus, the results suggest that government organizations should focus more on targeting these particular groups on any governmental issues and provide niche social media channels to attract the users on issues that are important to them for them to take further action in addressing the issues. This corresponds with various literature (Smith, 2010; Nam, 2011; Kavanagh et al., 2012; Nam, 2012; Warren et al., 2014) that social media users are mostly social activist participants who are already interested in common issues and affairs, for example 14% look online to see who is contributing to the campaigns of their elected officials and 85% of Twitter users cite their participation in community groups.

The statistics in this study support this theory as there was a relationship with respondents to take action on social issues and express concern. Therefore when common causes are posted on social media, they are shared immediately illustrating a concern for social issues that build awareness to take action on that issue. Furthermore, the results also demonstrated that social media has inspired users to learn more about social issues because of what they have read on social media (43%) and it has encouraged users to take action on social issues because of what they have read on social media (18%).

Meanwhile these results suggest that social media can contribute to online civic engagement with public authorities for public issues when interacting with government agencies. In other respects, various empirical research studies have also suggested that social media users' motivations to interact with e-government are based on individual needs and circumstances. Similarly regular information and services across social media platforms is received which results in an increase in user satisfaction and trust in government, for example, 86% report they would use Facebook, 28% would use Twitter, and 11% would use a blog to let others know they were safe in a national emergency situation.

In relation to users using social media to interact with government organizations, the statistics revealed that social media can promote positive opportunities for citizens to communicate with government agencies as users perceive the tools as a useful way to provide access to existing information.

Furthermore, social media users revealed a positive attitude towards government organizations using social media. Social media users strongly agree with positive statements about two types of government engagement, 77% strongly agreed that government agencies using social media tools makes government agencies more accessible, and 82% strongly agreed that it helps people to be more informed about what the government is doing. On the other hand, when respondents were asked to answer two less positive statements about government social media engagements, 43% disagreed that it is a waste of government money and 76% strongly agreed that the tools just deliver the same information in different ways, suggesting that citizens feel more obliged to

communicate with government agencies if their presence was more interactive and fully engaged in a two way communication on the tools.

This highlights the fact that the extended use of social media technologies has the capability to bring positive opportunities to promote governmental change and online civic engagement. It is also interesting that social media tools are not only used for social causes, but also to promote collaboration, co-creation and participation in community involvement which is consistent with what other scholarly articles previously reported (Bresciani and Schmeil, 2013; Snead, 2013; Feeney and Welch, 2013; Warren et al., 2014). More specifically, Web 2.0 tools have increased the dialogue component of government assistance in communication and opportunities exist for agencies to increase public participation, engagement, and feedback with agency website content and activities through use of social media applications (Snead, 2013; Carim and Warwick, 2013).

What this study has added to the literature is that, social media has currently increased the diverse mix of demographic groups who engage and interact with the technologies. It has also presented the factors that influence the extended use of Web 2.0 tools in various activities and also the long-term aspects of the technologies such as, who will use them and how they will use them. It has also provided an overview of social media technologies in terms of its functionalities, the characteristics that support the use of social media tools as well as the history and classification of social media technologies in terms of content - orientated sites (YouTube or Instagram) and user- orientated sites (Facebook and LinkedIn). In addition, given the popular rise of the commonly used social media platforms and the impact it has on people's daily lives, the statistics showed that the high-level use is not likely to change due to the increase of media sharing tools of Web 2.0 applications. It is worth noting that social media has dynamic properties, therefore not only can we extend the use of social media, we can even evolve it into rich features of Web 3.0.

## 5.1 Limitations

A number of limitations were identified in the research:

- As this study employed a secondary dataset, there were some limitations in measurements, for example, the survey only focused on United States online adults. Therefore further research should be conducted to explore online adults globally. This includes a richer ethnographic research on populations and consisting of non-users which would assist scholars to understand the long-term benefit of social media. There was also not enough questions to represent the type of usage on primary social media platforms. The study should be repeated for other demographic groups in developed countries such as the older generation and younger users of social media.
- More research is needed on who was using social media technologies, why and for what purposes. This means that more quantitative and qualitative research is needed to understand the relationships between socio-demographic factors and using social media.
- It was difficult to represent in depth understanding of the behaviour of social media users as the research employed a quantitative statistical analysis, which gained casual answers from respondents
- It was difficult to gain a better understanding of users' benefits of social media and what type of activities would attract users' interaction with the tools which highlight the importance of social media sites and the lives of users and as an area of research.

## **Chapter 6: Conclusion**

The concluding findings of the study revealed that the classification of social media users was specifically the younger generation 18-29, female users, higher income and college graduates on the most popular social media sites and they visited social media sites several times a day in relation the most popular social media sites on desktop and mobile devices. As for interacting with public organizations the findings include: expressing concern and taking action on social issues were the significant factors for using social media to interact with both public authorities and improving public services. The following findings of the study addressed the nature of using social media tools in various activities and identified that photo and video tools have emerged as the foremost media sharing tools for online social experience. The statistics showed that respondents prefer to communicate by sharing videos and images rather than text. This is exemplified by the rise of Pinterest, Instagram and Tumblr and the growth of smart phones (mobile social media) which has also propelled the growth of online video culture.

Previous research has been conducted on social media use particularly on the intention to use a social networking site. However, little research has looked into the wider context of the demographic groups of social media users, the usage of social networking sites and the type of interaction and communication activities. Therefore, this study explored the relationship between online users and social media sites in terms of social satisfaction with regards to age and gender, the relationship of social networking sites, the predictors of social media use and the future use of social media. The study also examined the communication and interaction impact of media sharing tools (photos and videos) on social media.

The statistics in the study found a number of factors that were important for the future implications of social media, as the results showed gender and age were significant predictors of using social media tools. The results also provided predictor variables for future social media usage. The key determinants included: age, suggesting that younger users aged 18-29 were more likely to be users of social media; mobile Internet access, suggesting that users with mobile Internet were more likely to be future social media users which also increases mobile social media; and gender was a major predictor indicating that females are more likely to be social

media users particularly for private and general oriented usage on the platforms. The statistics positively predicted that 72% of Internet users will use social media in the future. The statistics revealed that a significant relationship between age of online adults and attitudes towards using social media was a long-term implication of usage. Other factors included the growth of online video culture as the statistics showed the use of video tools varied significantly across three types of video usage: watching, posting and creating. Photo tools also contributed to the long-term implications as photo sharing has rapidly grown for users to communicate their messages to other users; Instagram, Pinterest and Snapchat have facilitated the growth of photo sharing on social networking sites.

## **6.1 Achievements**

Academically, the study has achieved new understanding about the following: social media usage; the demographics of online social media users including the demographic profile of each social media platform; the characteristics of social media activities and experience in the context of growth of online video culture, growth of sharing photos, growth of mobile use in the context of mobile social media and rise of media content platforms such as Pinterest. The study also achieved the nature of social media use; the long term implications including the predictors of social media use: age and gender, and the key determinants of future social media usage; the factors that contribute to online civic engagement. Finally, the study also contributed to the research field, a multi-layer conceptual framework to analyse social media benefits to help understand how social media will impact various activities in organizations. This framework provides a rich foundation for further research that will pursue social media benefits to users in the community and organizations as well as the perceived opportunities and value for the academic and industry practice discipline. This research recommends that academic researchers and industries should employ the multi-layer social media benefits conceptual framework to present a good explanatory guideline in encouraging future online communications with social media technologies.

Overall, this research contributes to the understanding of the evolution of social media and its extended use towards the attitudes and factors of using the technologies in providing the foundation for future studies.



## **6.2 Future Research**

This study provides important starting points for further research in several areas. First, future research should explore and widen the understanding of leading social media platforms such as Google plus, Pinterest, Instagram and Twitter and also focus on in depth specific subareas and key determinants of each sites usage. Second, addressing further aspects of mobile social media in terms of the foremost social media platforms is needed to gain a richer understanding of the rise of mobile devices and use of social media applications are among society. Third, future studies should conduct further research on the relationships between user characteristics, activities, content and social media use and evaluation. Further studies should explore the impact of social network sites communication activities on social satisfaction and what type of content is posted and shared on social media technologies. Fourth, more examination on age and gender when using social media in terms of social role satisfaction and different aspects of social media use and other personal interpersonal characteristics that may have a stronger relationship on social media use such as the type of motivation to communicate with others in social networks. Moreover, more in-depth analyses and empirical assessment on social media research is needed such as the definition of social media and particular attention should be on the technical aspects such as the functionality and uses. Finally, the key changes and development of social media in particular to Web 3.0 is still ongoing, and therefore a deeper investigation is needed to understand future direction of social media technologies.

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## **Appendices**

### **Appendix A**

This is Appendix A

## A.1 Future Social Media Trends Benefits Guidance Conceptual Framework

This is Appendix A, Section 1.

**Table Future Social Media Trends Benefits Guidance Conceptual Framework**

<b>Social Media Mission</b>	<b>Social Media Goal</b>	<b>Emergent Social Media Trends</b>	<b>Example Utilization</b>	<b>Outcome</b>
Two Way communication	<ul style="list-style-type: none"><li>• Drawing users attention to the social media activities in government</li><li>• Increasing a two way dialogue conversation and data sharing between government and members of the public</li></ul>	<ul style="list-style-type: none"><li>• Employing new job titles e.g Social Media Marketing Coordinator, to focus on online discussion and interaction with citizens</li></ul>	<ul style="list-style-type: none"><li>• Employing staff solely for participating in social media activities in a two way dialogue with citizens increases users attention to the social media activities in government</li></ul>	<ul style="list-style-type: none"><li>• Employing government staff with specific job titles which focus attention to the social media role they perform</li><li>• Increased public engagement</li><li>• frequent visits to government website</li></ul>



Open Interactive content sharing	<ol style="list-style-type: none"> <li>1. Reaching larger population of citizens</li> <li>2. To increase interactivity with citizens</li> <li>3. inclusive and accessible</li> <li>4. frequent updates online</li> </ol>	<ol style="list-style-type: none"> <li>1. Specific niche audiences</li> <li>2. Visual based content –outperforms text for liking, sharing, commenting and retweeting and means government can integrate image based media into their social media strategy</li> <li>3. Rise of Micro-Video –e.g. Twitter’s Vine and Instagram’s video sharing feature</li> <li>4. Use social media even more in their campaigns</li> <li>5. Pay attention to news trends and use them</li> <li>6. Content must be relevant to be useful</li> <li>7. Becoming more mobile – Smartphone and tablets outperform PCs and laptops</li> <li>8. Facebook, Instagram and Twitter offering location based tools</li> </ol>	<ol style="list-style-type: none"> <li>1. Government agencies can create their own social networking site appealing to users already involved in social media activities and attend to their needs</li> <li>2. Government agencies using visual based content on social media will impact on society and increase both public engagement and reaching a larger population of citizens e.g. posting an image of poor road conditions or an anti-closure image regarding closure of public services in local towns that the local public can retweet, comment, like or share.</li> <li>3. Use of this technology will encourage citizens to view on</li> </ol>	<ul style="list-style-type: none"> <li>• Increased interaction with back and forth engagement between agencies, citizens and diverse constituencies</li> <li>• Government viewed as an open service</li> <li>• Increased public awareness</li> </ul>
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- smartphones and share. high quality or entertaining videos for powerful information broadcasting shows high numbers of viewers (50% watch the complete output and 79% are on auto-play.)
4. To create public awareness, hire new staff, push lead generation, explore benefits
  5. Immediate response from govt to any trending news topic that emerges
  6. Citizens are targets for information services therefore it is important the right platforms, hashtags and keywords must be used for authenticity
  7. More investment by Govt in mobile content, mobile services, location-based services or
-

Social media exposure	<ul style="list-style-type: none"> <li>• Quality of information</li> <li>• Government performance, services and processes to be transparent</li> <li>• Release information immediately and make it available to the public for informed discussions and participation</li> </ul>	<ul style="list-style-type: none"> <li>• Biometrics to target privacy and security</li> <li>• Google+ to be used for a ‘one size fits all’ social network</li> </ul>	<p>8. Government agencies can use location details to engage with citizens and to find out more about them to promote better rapport.</p> <ul style="list-style-type: none"> <li>• Biometrics can act as a solution for data privacy standards e.g. face, finger, eye recognition</li> <li>• As Google+ directs themselves to even better integration with other features of the web, governments can enhance data quality improvement, consistency, accuracy and timeliness and gain high value, high impact government data published online.</li> </ul>	<ul style="list-style-type: none"> <li>• Improved accountability</li> <li>• Improved data quality improvement, consistency, accuracy and timeliness</li> <li>• Increased public awareness of government data and process</li> </ul>
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Active Participation	<ul style="list-style-type: none"> <li>• Public feedback and comments, conversation, voting and discussion</li> <li>• Communicating interactively</li> <li>• Self- selection for online participation</li> <li>• Decrease diversity in participation</li> </ul>	<ol style="list-style-type: none"> <li>1. Social advertising</li> <li>2. Sleek, user-friendly design.</li> <li>3. Evolution of image Social Media Platforms such as Pinterest, Instagram and Tumblr</li> <li>4. BYOS – Bring Your Own Security (New trend building up)</li> <li>5. Automation of Knowledge Work - intelligent software systems that can perform knowledge functioning tasks for unstructured instructions and sensitive judgments</li> </ol>	<ol style="list-style-type: none"> <li>1. Important for government agencies to promote public outcomes and get more interaction from citizens in their society <ul style="list-style-type: none"> <li>• Social media platforms such as Twitter will be useful it offers three kinds of paid advertising: promoted accounts, tweets, and trends that governments can take advantage of.</li> <li>• Many sources have predicted that specialized social media platforms and sites are going to become more popular.</li> <li>• Governments can target their social media campaigns. Social networks such as LinkedIn already let people target particular segments and audiences with</li> </ul> </li> </ol>
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updates.  
Conversely if  
people wish to  
target an even  
more specific  
audience, then it  
would be useful to  
look at niche social  
networks such as  
Untappd, Ravelry,  
Gentlemint,  
ThirdAge, and  
Meet Pips

2. Citizens need  
technology to not  
only complete a  
job, but to look  
impressive whilst  
completing it and  
to have an  
instinctive, user  
friendly design.
- Web 3.0 allows  
friendly user  
interface social  
networks where  
citizens can  
immediately do  
their activity then  
rather study  
another social  
network's complex  
interface
3. Use of Pinterst,  
Instagram and

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Tumblr has increased users' preference of communicating by visual content.

4. Governments can apply BYOS ethos to control their own security of data and encryption rather than leaving it to cloud hosts to control their security.
5. Data governance structure and process are achieved and improved and unstructured government data is widely used and shared online

Active Collaboration	<ul style="list-style-type: none"> <li>• Open and public collaboration with government agencies</li> <li>• Public-private collaboration with business agencies</li> <li>• Private – citizen collaboration with the private selection enables government to deliver value added services to customers crowdsourcing</li> <li>• Value –added services co-created</li> </ul>	<ol style="list-style-type: none"> <li>1. mobile applications</li> <li>2. Location based applications</li> <li>3. Data Visualization</li> <li>4. 3D Wikis</li> <li>5. 3D Encyclopedias</li> <li>6. Online 3D Games</li> <li>7. 3D Avatars</li> <li>8. Synchronous/Asynchronous and Social Content</li> <li>9. Citizens and community managers as collaborators</li> </ol>	<ol style="list-style-type: none"> <li>1. Every task will be achieved through a dedicated mobile application e.g. governments producing proprietary applications to aid government operations which citizens can download on their mobile and interact with officials to collaborate on decision making and respond to national emergencies and natural disasters</li> <li>2. Citizens using geo-networking applications that use virtual data to find geo-tagged information of people's whereabouts. Useful for national emergencies and public engagement for conversation and interactive communications</li> <li>3. Governments can</li> </ol>	<ul style="list-style-type: none"> <li>• Citizen participation in policy development</li> <li>• Policy design</li> <li>• Community reporting</li> <li>• Council rating by citizens and citizens profiling</li> <li>• Citizen-citizen support</li> <li>• Permanent open calls</li> <li>• Satisfied citizens through receiving personalised communication from government officials</li> <li>• Satisfied citizens are more likely to experience feelings of trust and loyalty to local and state governments</li> <li>• Community managers role can be effective by having agencies webpages integrated with social networks (Facebook and Twitter) and engaging with citizens about transparent data enhances trust</li> <li>• Citizens feel valued, increased self-worth and satisfaction of participating in unique</li> </ul>
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explore dynamic  
virtualization  
methods and  
advanced display  
computing devices  
to navigate through  
multiple  
dimensions of data  
e.g. the  
government can  
perform data  
analytics  
capabilities from  
unstructured data  
and obtain news  
insights which can  
improve decision –  
making

4. Citizens can a  
perform a search  
and chose a result  
related to  
information about  
another  
geographical  
region, the camera  
will travel to that  
particular place  
spinning on the  
globe to receive  
and send relevant  
audio/video  
information to  
them. For example  
if a search

engagement that makes  
a difference



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performed on area  
problems in  
Halifax England,  
the camera will  
move towards  
Halifax, England  
and an article about  
problems area  
associated with  
Halifax will be  
presented to the  
user along with a  
video on specific  
problems that are  
experienced in the  
town.

5. A 3D  
Encyclopaedia  
would be able to  
provide rich  
information to both  
citizens and  
government  
officials which  
includes all media  
and animation for  
them so that they  
can have better  
impact on  
knowledge of  
society issues or  
government  
policies  
geographically.
  6. Can promote
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citizen  
collaboration  
where public  
members can come  
together, meet  
virtually, and  
collaborate  
together. In a 3D  
world, they can fly  
over and move  
things that would  
be very similar to  
their real world but  
with less cost and  
danger.

7. Can assist public  
members to create  
a virtual 3D avatar,  
can encourage role  
playing in having  
informed  
discussion about  
government issues  
and voting. Public  
members can play  
a role and become  
the profile they  
want to interact  
with
8. Citizens who are  
live (synchronous)  
can interact with  
the interface to add  
or edit content;  
other citizens can

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see it in real time  
without needing to  
refresh the page in  
the browser. The  
content which is  
synchronous means  
that any citizen  
who was off-line at  
the time the change  
took place can  
review the changes  
anytime he logs  
onto a government  
site. As the website  
will have an online  
chat facility to  
enable  
communication  
between citizens  
and local councils

9. Citizens can open  
collaboration with  
government  
agencies by  
helping design new  
policies, produce  
new content and  
services which is  
more effective than  
higher government  
officials
  - Community  
managers can  
improve the  
marketing of the
-

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organization,  
promoting events  
and services,  
increase the  
reputation of the  
government local  
states, improving  
the management of  
local councils by  
preparing metrics  
for communities  
and networks,  
interpreting the key  
success factors and  
helping  
organizations to  
plan their services  
and decision  
making, promote  
business  
participation and  
collaboration in  
order to improve  
crowdsourcing  
processes at  
different levels of  
the value networks  
in federal  
governments

- Community  
managers can  
enhance citizen  
trust through  
sharing their  
governments vision

			and engaging citizens as participants	
Social Media community relationships	<ul style="list-style-type: none"> <li>• Citizens as co-producers of government services and practices through social media as an interactive channel</li> <li>• Citizen to government</li> <li>• G2C</li> <li>• Crowdsourcing and delivery</li> <li>• Citizen reporting</li> <li>• Do it yourself government (C2C)</li> <li>• Service Monitoring</li> <li>• Self service</li> <li>• Self- Monitoring</li> </ul>	<ol style="list-style-type: none"> <li>1. Bigger Smarter TVs -</li> <li>2. Multi-screen World -As of January 2014, Live tweeting TV shows are high on the horizon. There are opportunities for a second screen experience.</li> <li>3. Social Technology by social sharing</li> <li>4. Digital curation optimise titles in search results so it is relevant to the audience</li> <li>5. Web 3.0 Intelligent search</li> <li>6. Web 3.0 personal portal</li> </ol>	<ol style="list-style-type: none"> <li>1. Citizen households will have the chance to surf the Internet, launch apps and have social interactions over their TV sets with public members over society issues. <ul style="list-style-type: none"> <li>• Citizens can have the opportunity to use voice command and gestures i.e. talking to local government agencies over Smart TVs to have discussions and give feedback</li> </ul> </li> <li>2. Further TV programming will include hashtags to remain in conversation online through break times or after a specific government</li> </ol>	<ul style="list-style-type: none"> <li>• Social interaction improved by citizens voicing their opinions on government services, rules and regulations.</li> <li>• Improve digital divide as access to PCs is not the issue but access to Smart TVs increases participation and collaboration as the technology is easier to understand and use</li> <li>• Increases public participation and collaboration as public is engaged through conversation</li> <li>• On-going community based conversation and discussion</li> <li>• Improved smart government</li> </ul>

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activity TV show  
airtime. Emerging  
Apps such as  
Zeebox can alert  
users when a  
government  
activity is about to  
air, when online  
trending  
conversations  
regarding  
community based  
topics begin and  
bring to light  
related content

3. Social sharing  
allows citizens to  
find their way  
under the roof of a  
number of  
government  
organisations  
applications and  
also launching  
itself firmly as a  
tactical part of  
many full citizen  
engagement and  
public advertising  
efforts.
  4. Citizens using  
social curation to  
share the collection  
and curation of  
content over
-

- 
- various social  
platforms
5. Intelligent search  
engine can  
facilitate citizens'  
find information  
relevant to their  
needs at a deeper  
level which can  
strengthen  
communication  
and cooperation  
with government  
officials and public  
members and to  
avoid the problems  
with distorted  
information  
brought on by  
government  
officials who do  
not provide  
relevant  
information to  
citizens
6. Citizens to have a  
personal  
government portal  
and customise  
information  
according to their  
own information  
demand and add  
various application  
components to
-

<p>Universal Engagement</p>	<ul style="list-style-type: none"> <li>• Universal and sustaining public engagement</li> <li>• The public engaging in several government activities through universal computing devices</li> <li>• Unified public engagement</li> <li>• Transparency, participation, collaboration and co-production increased</li> </ul>	<ol style="list-style-type: none"> <li>1. Pervasive Computing</li> <li>2. The Internet of things</li> <li>3. Temporary Social Media -</li> <li>4. Social Networking will become Pervasive-everything people do in their lives will connect with social networks</li> <li>5. Web 3.0 Virtual World</li> <li>6. Web 3.0 environment to realise user dominate and personalised information services</li> <li>7. Media Centric Web</li> </ol>	<p>their portal. The portal can styled and designed to their wishes and process smart information and provide information which is consistent with their personal characteristics.</p> <ol style="list-style-type: none"> <li>1. Citizens can digitally engage and interact (via their mobile devices) with enabled objects around them</li> <li>2. The government can deploy the Internet of Things to improve data collection, monitoring and decision making surrounding citizens or even public facilities and issues through data collection from networked devices. Mobile internet can assist to deliver better public services in an</li> </ol>	<ul style="list-style-type: none"> <li>• Social media to become mobile, smarter, ubiquitous</li> <li>• Citizens' can choose the way linking to the government website in the environment of Web 3.0 which can realise the universal government information service through the way</li> <li>• Establish a reliable interactive government information service which is controlled by citizens under Web 3.0 environment</li> </ul>
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effective and efficient manner. It can facilitate policy makers to balance the requirement to inspire growth with their accountability to safeguard public welfare.

3. User created content posted for spontaneous reasons will only last for a seconds before it self-deletes which enhances privacy of online communications and citizens to be free from tracking and spying from others
4. Citizens can see what their fellow citizens like or follow and instantly know what they are doing in support of government services, rules and regulations as it is always on their news feed. An

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increased sense of  
community  
centered activities  
around government

5. Virtual Government can show a real picture of the government, government branches and non-profit organizations to citizens' who can interact with them in any location. In virtual government, staff members serving them can communicate with them face to face and ask questions related to government services as if they are in real life
6. The Web 3.0 environment can provide citizens the opportunity to realise user-dominant and personalised information services. Citizens can choose the way

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linking to the government website in the environment of Web 3.0, and the Web 3.0 realises the government universal information service through the way. Government services under web 3.0 environment can build customization mode “information service supermarket”, it can show the service information to citizens through the network and citizens can choose the information autonomously.

- The government can also provide specialised information service according to the special requirements of citizens e.g. road conditions, air quality, public

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safety, preparation for emergencies and any identified problems such as a problem in their street regarding overcrowded car spaces and the solution for the known problems. Quality pushed information is guaranteed through the information filtering technology of Web 3.0.

- Citizens can get a variety of RSS feeds from the government information service platform that they are interested in e.g. how much traffic is in their area with a media output on their mobile device, and the government can push information to citizens according to their user subscription channel and the

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information that they are interested in.

7. Search engines can provide governments and citizens to take media such as video, images, audio etc as an input element and be able to search for similar media objects e.g. a citizen can search for a video of electric power consumption in North London by providing a video regarding electric power consumption as an input to the search engine and based on the content of the video the engine will be able to retrieve videos of North London electric power consumption with similar contents in the video.

## Appendix B

This is Appendix B, Section 2

### B.1 Text search words

Social Media Keywords	E-government Keywords	Other
Web 2.0	E-government	u-government
Web 1.0	Government 2.0	g-government
Web 3.0	E-Governance	e-petitions
Social Networks	E-voting	e-authentication
Web 2.0 tools	E-democracy	e-parliament
Web 2.0 applications	E-participation	e-procurement
Social Media platforms	M-Government	
Web 2.0 technologies		
Social network tools		
Social media trends		
Emergent technologies		
Virtual Worlds		
Future social media trends		
Evolution of social media		
Evolution of social networks		
Technology future trends		
Mobile social media		
Augmented reality		

Social media and GPS		
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**Figure 1**

## **B.2 Electronic Databases**

<b>Electronic Databases</b>	
ScienceDirect	Wiley InterScience
University of Huddersfield Summon database	ProQuest
Google Scholar	EBSCO
Emerald	IEEE Xplore
Elsevier	Microsoft Academic Search
Academic Search	Sage Journals Online
Blackwell Synergy	Zetoc

**Figure 2**

## **B.3 Inclusion criteria and Exclusion criteria**

<b>Inclusion criteria</b>	<b>Exclusion criteria</b>
Written in English	Not written in English
Conducted after 2007	Studies conducted before 2007
Obtaining published and unpublished research	Studies not based on empirical research
Focus on web 1.0 and 2.0 technologies and social networks	Studies based on opinions by single person
Focus on social media technologies and	Studies not focusing on web communications

platforms	tools and social media
The concept of social media and the development of social media	Studies focusing on generic usage of social media
Focus on web 2.0 and social media technologies with E-government	Studies focusing on social media usage in other public and private areas
Focus on transitions made by government organisations as they progress into social media technologies	Studies focusing on irrelevant conclusions of e-government and social media
E-government usage of online social networks linking to citizens and public authorities	Studies focusing on areas of e-government and social media that are relevant for the research

**Figure 3**

#### **B.4 Search Strategies**

<b>Search Strategies</b>		
Boolean Logic	Filters	Exploded MeSH
Social Networks OR Social Media	Computers in Human Behaviour	Social Media [majr]
“Social Media Trends”	Public Relations Review	Social Network [majr]
(Emergent Technologies)	Futures	E-Government [majr]



Web 2.0 tools AND social networks	Computers and Education	Government 2.0 [majr]
“Future Social Media Trends”	Technological Forecasting and Social Change	Web 2.0 technologies [majr]
“Future Social Media Technologies”		Technology [majr]
“Future Technology Trends”		
Online Social Networks AND Web 2.0 technologies		
E-government AND Social Media		
E-government OR E- Governance		
Government 2.0 OR Governance 2.0		

**Figure 4**

## B.5 Sample of Data Extraction Form

### Sample of Data Extraction Form

Article Information									
Author(s)	Malita, L	Jussila et al							
Title	Local e-government 2.0: Social media and corporate transparency in municipalities	Social media utilization in business-to-business relationships of technology industry firms							
Year	(2010)	(2013)							
Page Number	748 - 752	606-613							
<b>1. Focus of the study</b>									
Purpose									
When the study was carried out									
Demographic details of study									

Location of study									
<b>2. Methodology</b>									
Sample frame and size									
Data collection Methods									
Data Analysis methods									
Strengths of methodological approach (if applicable)									
Limitations of methodological approach (if applicable)									
<b>3. Findings</b>									
Main Findings									
Conclusions									
Implications to practice									
<b>4. Analysis</b>									
Summary of ways the article contributes to the literature review									

**Figure 5**

## **B.6 Checklist for assessing quality**

### **1. Study Purpose**

Was the purpose stated clearly?

### **2. Literature**

Was relevant background literature reviewed?

### **3. Study Design**

Was the study design appropriate for the review questions?

Was/were the viewpoint(s) or the analysis clearly stated and justified?

Were the aims and objectives clearly described?

Were the main outcomes clearly described?

Was the form of social media adoption of web 2.0 applications stated?

Was the form of social media adoption of web 2.0 applications justified in relation to the review questions?

Were case studies considering the implications of social networks in e-government reliable?

Did studies emphasise the scenario concerning social media usage?

Was the evolution of social media from web 1.0 and 2.0 to 3.0 and the future implications to e-government reliable?

Was the evidence demonstrating the development of social media and nature of social media use?

Is there evidence demonstrating the challenges and limitations from the use of social media and the application of social networks in the government?

Is there evidence of social, economic or demographic influences that aim to recognise social media users' motivations to interact with the tools, and how this interaction can assist in improved public services?

### **4. Sample**

Was the sample described in detail?

How was sampling conducted?

Was there similarity between the groups?

Was sample size justified?

Was informed consent obtained?

Were details of the design and findings of the effectiveness study given (if based on a single study)?

Were details of the methods of synthesis or meta - analysis of studies given (if based on an overview of several effectiveness studies)?

Were primary outcome measure(s) for the utilisation of social networks in various activities clearly stated?

Were the methods used to value utilisation of social networks and other benefits stated?

Were the relevance of social networks in terms of definition, usage, functionality and purpose in government organisations to the study questions discussed?

## 5. Reporting

Was there adequate adjustment for co-founding in the analysis from which main findings were drawn?

In case studies, were topics in different technical features of social media and were case studies recruited over the same period of time?

Were suitable findings used to assess the main outcome?

Were main outcome measures reliable and valid?

## 6. Findings

Were the main findings clearly described?

Reported in terms of statistical significance?

Discussed and justified?

Were the analysis methods suitable?

7. Conclusions

Were conclusions suitable considering study methods and results?

Did conclusions follow from the data reported?

**Table B.6**

## **Appendix C**

This is Appendix C.

### **C.1 Main concepts and findings**

This is Appendix C, Section 3.

The search for literature using the general terms “social media technologies” identified several thousand articles. The terms were then combined with related keywords such as Web 2.0 technologies, Web 1.0 and 2.0 tools, Web 3.0 technologies, social media tools, social media trends, emergent technologies which broadened dramatically the listed results. A further search was conducted on e-government and social media research and (48) journal studies were obtained from the database. Following on, when the search retrieved the full text of all social media articles and also e-government with social media research articles, that included keywords such as Government 2.0 and e-governance it resulted in a final list of 300 articles of both empirical and peer reviewed studies. From the exclusion criteria, a total of (230) articles were selected and explored based on the manual review of titles, abstracts, and full text. Many articles from the IT literature emphasised the technical nature of social media such as the development frameworks of Web 2.0 and 3.0 which included Ajax, JavaScript, RDF, XML and APIs. The e-government and social media studies focused and analysed how Web 2.0 technologies were being utilised in the context of government organizations in terms of services and communication levels. The search strategies and exclusion and inclusion criteria resulted in the 199 research studies which were categorised into the key areas relevant to the study.

The first category illustrates social media in the context of World Wide Web investigating specific web applications from Web 1.0 to Web 4.0, for example the main types of Web 1.0 tools and Web 2.0 applications and web 3.0 technologies which address the Semantic Web, Web 3D and the Social Web.

The second category presents the main findings from a detailed analysis of social media technologies and social media applications. This included Web 2.0 technologies such as social networking sites, wikis, blogs, really simple syndication and social media applications, functionality of social media, usage and characteristics, classifications and the development of social media.

The third category investigated the challenges and limitations of social media and how some of the challenges impact e-government.

The fourth category highlights articles that addressed citizens using social media to engage with e-government and Web 2.0 technology in government organizations in Europe, North and South America, Asia and Africa with some concentrating on state and local governments and the majority of articles focusing on the participating individuals involved in e-government 2.0 activities.

The findings for category one indicate that the 11% (N=21) of the studies believed that the genesis of social media evolved in as early as the 1970s when the first email was sent and when the Internet started out as the Bulletin Board System (BBS) that allowed users to exchange content with each other. This was followed by the worldwide web in the mid-1990s where users



could develop homepages and personal homepages to be known today as blogs. Social media research focuses on the root of the Internet to the era of Web 1.0 and in Web 2.0 the web developed tools and applications such as blogs, wikis, bookmarking, photo and video podcasting. It is a form of virtual content that specifically different the days of the BBS in the late 1970s. Web 3.0 is also known as the semantic web and takes social media to a new level by which users experience a more interactive personal engagement with the web such as intelligent search to find specific information in that search or media centric web search which allows users to search for media content on the web and the results displayed are closely related to that particular media object such as a photo, video or audio that was in the search input. Finally web 4.0 is still in progress but the idea emphasises on ubiquitous web or the internet is everywhere. This promotes the idea that social media can be interactive with any mobile technology, devices, TV, home appliances, vehicles on a global scale and in real-time and with 72% of online adults using social networking sites and on multiple platforms (Pew Research Center,2013), the future of web 4.0 is looking promising (see Table 4.1.1).

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The findings in category two maintains that social media is the core technological foundation of web 2.0 applications on the Internet. It was found that 45% (N=89) agreed that the fundamental idea of social media is the creation and exchange of user generated content performed on popular platforms such as Facebook or Twitter. Various researches on social media report on the development of social media with a few studies focusing on the development of social networking sites, for example 1995-2002, the launch of Classmates, SixDegree and Friendster. The studies outline that social networking sites allow users to build their network of personal and business relationships by creating a profile with information for other users to search and access

such as name, friends list, interests and photos and features that allows them to communicate via private messages and chats; and quickly exchange information immediately. The research findings have also shown that social media encompasses many web 2.0 applications that offer services to online users such as blogs, social bookmarking, wikis and media sharing such as video tools (YouTube), photo tools (Flickr) and audio tools (Last.fm). The literature analysis identified research themes in social media such as the classification of the tools and the type of usage and characteristics surrounding the tools. The theme 'classification' investigates the various classifications of social media from the perspective of targeted groups and areas of interests. It was found that social media is classified based on communication channels such as blogs, general communities and sharing sites. Similarly the classification also includes content orientated sites such as YouTube, Twitter and Instagram and user orientated sites which include Facebook, Tumblr and Myspace for private networks and LinkedIn is fundamentally used for business networks. However, Google+ is regarded as a general and special interest network as users join communities for various usages such as topics of interests on any aspects of their lives including business communities.

The theme 'usage and characteristics' involves understanding the concept of social media and social networking sites and the characteristics of social media and social networking sites. For example social media characteristics include having a diverse range of content that can be exchanged on social media sites and allow significant feedback tools for real time two way communication; and the characteristics of social networking is creating social links among users and adding value to individuals to join their network (See Table 4.1.2 for details of articles of category two findings).

For category 3, analysing the research on social media and e-government in this perspective, it was found that almost 27% (N=54) of the total studies in the context of social media applications have looked at the type of social media technologies government organizations are using and the extent of how significant is the perception of social media in government agencies. It was found that although government organizations are utilizing social media, they have not adopted the tools to their full potential, therefore the full interactive presence of government organizations on social media will receive the attention of citizens who will engage with the tools to communicate with agencies. In addition citizens already participate in civic engagement with other citizens and the majority of them use social media technologies to report emergencies and issues. The theme mostly covered the type of tasks that social media is used and the main purpose of the tools and how social media can improve government services and practices. (See Table 4.1.3 for articles investigating specific social media technologies in e-government services).

The analysis of articles publishing challenges and limitations of social media and in the context of e-government in category 4 identified the following themes such as privacy issues, security threats and risks, digital divide, legal and information leakage. The studies 18% (N=35) were concerned that social media on a personal level creates identity theft issues such as fake profiles and in terms of industry issues there is the risk of ensuring the protection of the type of information that is exposed on social media platforms, the reliability of information from agencies and ensuring who will have access to certain messages that are posted online leading to specific issues such as information being deliberately misleading and false (See Table 4.1.4 for the article findings of challenges and limitations concerning social media applications and in the context of e-government).

#### 4.1.1 Web generation of social media technologies

Classification	Features	Key Findings	References
Web 1.0 Generation	The read only web leading to the first generation social media tools	<ul style="list-style-type: none"> <li>Users can only read and share information on webpages, original social media platforms such as AOL instant messaging, forums, email, chat rooms</li> </ul>	Nath, Dhar, Basishtha, 2014; Kaplan & Haenlein, 2010; Kumar, Novak, Tomkins, 2014; Hall and Tiropanis, 2012; Reilly and Battelle, 2009; Evans, 2007; Parameswaran and Whinston, 2009; Aghaei, Nematbakhsh and Farsani, 2012; Strickland, 2012; Zhang, 2013; Kim et al, 2013; Musial and Kazienko, 2013; Wehbe and Bouabdallah, 2012; Lai et al, 2012; Hendler, 2010;
Web 2.0 Generation	The read and write web with two way communication known as web 2.0 tools and the most widely used social media technologies	<ul style="list-style-type: none"> <li>Users can have a two way communication instantly</li> <li>Most commonly referred to blogs, wikis, microblogs, social networks and social sharing</li> </ul>	Nath, Dhar, Basishtha, 2014; Patil, 2013; Kaplan & Haenlein, 2010; Kumar, Novak, Tomkins, 2014; Hall and Tiropanis (2012), Boyd and Ellison (2008), Reilly and Battelle, 2009; Evans, 2007; Parameswaran and Whinston, 2009; Garrigos-Simon, Alcamí, Ribera (2012)Aghaei, Nematbakhsh and Farsani (2012), Strickland (2012), Zhang (2013), Kim et al (2013), Musial and Kazienko (2013), Wehbe and

			Bouabdallah (2012), Lai et al (2012), Hendler (2010)
Web 3.0 Generation	The semantic web – the new personalised and human friendly social media technologies	<ul style="list-style-type: none"> <li>• Users can personalise interactive information.</li> <li>• The web has a language that can be read and interpreted by both machine and human e.g. social media sites such as iGoogle, MyYahoo</li> </ul>	Hall and Tiropanis, 2012; Reilly and Battelle, 2009; Evans, 2007; Nath, Dhar, Basishtha, 2014; Patil, 2013; Kaplan & Haenlein, 2010; Kumar, Novak, Tomkins, 2014; Mavridis & Symeonidis, 2015; Loureiro et al, 2012; Parameswaran and Whinston, 2009; Garrigos-Simon, Alcamí, Ribera (2012)Aghaei, Nematbakhsh and Farsani, 2012; Zhang, 2013; Kim et al, 2013; Musial and Kazienko, 2013; Lai et al, 2012; Hendler, 2010; Spagnuolo and Falcidieno, 2009; Abello et al, 2015

Web 4.0 Generation	<p>The ubiquitous web also known as the ‘internet everywhere’</p> <p>Future technological trends towards web 4.0 for the demand side of social media in government needs</p>	<ul style="list-style-type: none"> <li>• Social networks and web 3.0 and 4.0: their impact on the management and benefits for government organizations</li> <li>• The Social Web</li> <li>• Web 3D</li> <li>• Media Centric Web</li> <li>• The Semantic Web</li> <li>• The Internet is everywhere</li> </ul>	<p>Aghaei, Nematbakhsh and Farsani, 2012; Garrigos-Simon, Alcami, Ribera, 2012; Strickland, 2012; Abdel-Fatah Shaltout, Bin Salamah, 2013; Gill- Garica, 2012; Nath, Dhar, Basishtha, 2014</p>
		<ul style="list-style-type: none"> <li>• A smarter, networked, and integrated government</li> <li>• Semantic Web and Government 3.0 as an integrated virtual state</li> <li>• Crowdsourcing: the primary collaboration</li> </ul>	<p>Gill – Garica, 2012</p>

#### 4.1.2 Social Media technologies and Web 2.0 applications

Key Findings for the development of online social media	References
<p>1. The development of online social networks include:</p> <ul style="list-style-type: none"> <li>• The beginning of online social networks: 1997-2002 e.g. Six Degrees, LiveJournal, Friendster,</li> <li>• The growth of online social networks and the rise to popularity: 2003-2009 e.g. LinkedIn, Myspace, Facebook (Social networks grew to a global phenomenon with an increasing social and economic impact)</li> <li>• Online social networks – a worldwide phenomenon: 2010-present, Google+ is targeted to be the main competitor to Facebook as a global popular ONS. Social networks are no longer a niche sensation for young people. It reaches every demographic group worldwide and remains a global sensation with an increasing social and economic impact.</li> </ul> <p>2. The main perspective of the development of the phenomenal social media include:</p> <ul style="list-style-type: none"> <li>• Email</li> <li>• Usenet</li> <li>• Listserv</li> <li>• IRC</li> <li>• Personal websites, Discussion groups, chat</li> <li>• Social Networking site classmates.com and six degrees</li> <li>• World's first blog</li> <li>• Blogs, Podcasts, Wikis</li> <li>• Video and photo sharing</li> <li>• 2005 and beyond</li> </ul> <p>Examples of Web 2.0 social media tools include social networking sites, blogs, wikis, video sharing sites, microblogs, hosted services, web applications, mashups and folksonomies</p>	<p>Musial and Kazienko, 2012; Dewing, 2012; Boyd and Ellison, 2008; Kim et al, 2013; Patil, 2013; Heidemann et al, 2012; Kietzmann, Hermkens, McCarthy, Silvestre, 2011; Kaplan &amp; Haenlein, 2010; Barnett, 2011; Cecconi, 2007; Ahmad, 2011; Smith, 2010; Kumar, Chandran, Kumar, Karnavel, 2013; Kent, 2008; Edosomwan, Kalangot Prakasan, Kouame, Watson, Seymour, 2011;</p>

Key Findings of classification	References
<p>The classification of social media are content orientated sites consisting of:</p> <ul style="list-style-type: none"> <li>• Communication channels that provides information and text which are distributed at real time and updated continuously such as Twitter and blogs</li> <li>• General communities and rating sites with less formal interactions within closed sites and can be used for promotion, events and feedback such as Facebook or fan pages</li> <li>• Sharing sites that are used for archiving, storing and sharing videos, documents and slides with dynamic feedback channels such as YouTube and slideshare</li> </ul> <p>The development of social media and social networks demonstrate they exist for targeted groups and areas of interests.</p> <ul style="list-style-type: none"> <li>• Content –orientated sites include YouTube, Twitter Instagram, Pinterest, Tumblr</li> <li>• User-orientated sites include Facebook and Myspace for private networks and business networks for LinkedIn and Xing.</li> <li>• Google+ is highly used as a general and special interests network</li> </ul> <p>Social networks generalised into private, business, general and special interests</p>	<p>Kumar, Chandran, Kumar, Karnavel, 2013; Cecconi, 2007; Dawot, and Ibrahim, 2014; Doan, Ramakrishnan, and Halevy, 2011; Davies and Mintz, 2009; Zhou et al, 2011; Colomo-Palacios, Messnarz, Siakas, Palosi and Coakley, 2014; Ishak, 2012</p>

Key Findings of Web 2.0 technologies	References
<p>Web 2.0 technologies are defined as the user, by the user and for the user. Web 2.0 technologies include:</p> <ul style="list-style-type: none"> <li>• Content syndication (Really Simple Syndication, Atom and vodcasting and podcasting)</li> <li>• Widgets</li> <li>• Sharing and bookmarking facilities</li> <li>• Mashups</li> </ul> <p>Social media are applications that offer services to communities of on-line users. The tools include:</p> <ul style="list-style-type: none"> <li>• Blogs</li> <li>• Social bookmarking</li> <li>• Wikis</li> <li>• Media sharing e.g. photo sharing (Flickr), Video-sharing (YouTube) and audio sharing (Podcasts i.e. Last.fm)</li> <li>• Social networks</li> </ul>	<p>Smith and Lindner, 2010; Dawot, and Ibrahim, 2014 National School Boards Association, 2007; Ofcom, 2008; Tinmaz, 2013; Kent, 2008; Cecconi, 2007; Davies and Mintz, 2009; Zolkepli and Kamarulzaman, 2014; Gonzalez et al, 2014; Borges Tiago and Cristo'va'õ Veri'ssimo, 2014; van Zyl, 2008; Bechmann and Lomborg, 2012; Zhou, Xu, Li, Josang, Cox, 2011; Colomo-Palacios, Messnarz, Siakas, Palosi</p>



<ul style="list-style-type: none"> <li>• Mashups</li> <li>• Widgets</li> <li>• Virtual Worlds</li> <li>• Microblogs</li> <li>• Tagging</li> <li>• Syndication via RSS feeds</li> <li>• Web content voting</li> <li>• Web based communication (chat groups)</li> </ul> <ol style="list-style-type: none"> <li>1. Social media platforms encourage collaboration, participation and a fast interactive two way communication between users where they can exchange information in real time.</li> <li>2. Tools are crucial for e-government as they can assist in transparency, participation and citizen engagement for two way dialogue to enhance government practices</li> </ol>	and Coakley, 2014; Batrinca and Treleaven, 2014;
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Key Findings of Functionality of social media and mobile social media	References
<p>Functionalities of Web 2.0 – what are they and what is the purpose of them. Web 2.0 functionalities are</p> <p>Rich Internet Applications (RIA) for:</p> <ul style="list-style-type: none"> <li>• Improving user interface with browser activities</li> <li>• Limit the amount of data (e.g. browser plug-ins) downloaded to minimum, to avoid downloads whenever the page is displayed, reducing application load time, bandwidth requirements, and server load.</li> <li>• Enhance user experience with multimedia content and rich graphical user interface (GUI) e.g. application software</li> </ul> <p>SLATES functionalities:</p> <ul style="list-style-type: none"> <li>• Searching</li> <li>• Linking</li> <li>• Authoring</li> <li>• Tagging</li> <li>• Extensions (plug-ins for multimedia contents)</li> <li>• Signals (syndications like RSS to notify content changes)</li> </ul>	<p>Davies and Mintz,2009; Dawot, and Ibrahim, 2014; Doan, Ramakrishnan, and Halevy, 2011; Zolkepli and Kamarulzaman,2014; Borges Tiago and Cristo'vaõ Veri'ssimo,2014; van Zyl,2008; Colomo-Palacios, Messnarz, Siakas, Palosi and Coakley, 2014; Paul A. Tess,2013;Boll, 2007; Berthon et al,2012;Kamaljit I. Lakhtaria, Dhinaharan Nagamalai,2011; Andreas M. Kaplan,2012</p>
<p>The main function of social media is to:</p> <ul style="list-style-type: none"> <li>• Provide communication and interaction where people can share information with a profile and view and share content on connected profiles of others.</li> </ul> <p>The fundamental function of ONS is to:</p> <ul style="list-style-type: none"> <li>• Have personalised user profiles consisting of identifying information e.g. name and photo, personal contacts (friends) and interests.</li> </ul>	<p>Kaplan &amp; Haenlein, 2010; Chun, 2012; Dawot, and Ibrahim, 2014; Doan, Ramakrishnan, and Halevy, 2011; Gonzalez et al,2014; Kim et al, 2011; Scheepers et al, 2014; Nack,2010; Zhou et al ,2011; Nardis and Konrath,2013;</p>

<ul style="list-style-type: none"> <li>• Users also search for friend's offline and online and communicate with other users through private messages and chats.</li> </ul> <p>OSN represent powerful interactive and communicative platforms that allow users to exchange information and to present themselves in speedy and efficient manner.</p>	<p>Steinfeld, Ellison, Lampe,2008; Louis Leung,2013;; Chen,2011; Tess,2013;</p>
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Key Findings of Usage and Characteristics	References
<p>Usage of social media and online social networks –</p> <p>The concept of social media is:</p> <ul style="list-style-type: none"> <li>• providing users the ability to interact, communicate and connect with other users</li> <li>• It enables users to share text, images, video and audio files</li> <li>• Provides users an easy way to obtain information they require and build a relationship through a large connected human network</li> </ul> <p>The main concept of ONS is for:</p> <ul style="list-style-type: none"> <li>• Users to act independently from each other and build their own virtual identity by setting up a user profile and afterwards connecting to other created profiles to communicate with.</li> <li>• Users create personal networks containing hundreds of direct and indirect connections to family, friends, acquaintances, colleagues, and other likeminded users.</li> </ul>	<p>Bucher, Fieseler, Meckel, 2013; Heidemann, Klier, Probst, 2012; Chorng-Shyong Ong and Min-Yuh Day, 2010; Zhou, Xu, Li ,Josang, Cox, 2011; Batrinca and Treleaven, 2014; John, 2007; WonKim, RanJeong, Sang-WonLee, 2009; Maranto and Barton, 2009; Harris and Rea, 2010; Gehl,2011; Malita,2010; Scheepers et al, 2014; Sun,2011; Nack,2010; Duncan-Daston, Maude Hunter-Sloan, Fullmer, 2013; Squicciarini &amp; Sundareswaran,2009</p>
<p>The characteristics of SM include:</p> <ul style="list-style-type: none"> <li>• Allowing people to be both content readers and content generators or publishers</li> <li>• To be an important feedback mechanism where people have a two way communication and information flow</li> <li>• Diverse types of content can be collected and shared on social media sites e.g. news, advertisement, videos, documents, photos and music.</li> <li>• Users can enjoy uploading their own content, share their content with others and distribute content across their network of connected like- minded users</li> </ul>	<p>Colomo-Palacios, Messnarz, Siakas, Palosi and Coakley, 2014; Batrinca and Treleaven, 2014; WonKim a, __, Ok-RanJeong a,1, Sang-WonLee, 2009; Maranto a, Matt Barton, 2009; Gehl, 2011; Gu and Gunilla Wide'n-Wulff,2010; Scheepers et al, 2014; Clive Cox,2011; Anna C. Squicciarini &amp; Smitha Sundareswaran,2009; Panek et</p>

<p>The characteristics of social networks include:</p> <ul style="list-style-type: none"> <li>• The social activity links among users</li> <li>• To visibly search the users' social networks and the viral diffusion of information</li> <li>• Creating a significant value for the individuals who join in with them</li> </ul>	<p>al,2013; Wanga et al, ,2012; Glynn et al,2011; DeAndrea,2011; Shih-Tse Wanga and Shui-Lien Chen,2011; Habibi and Richard,2012</p>
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#### 4.1.3 Social Media and E-government

Classification	Features	Key Findings	References
Social Media Use by Government	<ul style="list-style-type: none"> <li>• Government accounts on social media platforms</li> <li>• Social Media Activity within government agencies</li> <li>• Followers and likes on social media platforms</li> </ul>	<p>Government related bodies tended to use Twitter, YouTube channel, Blogs, Mashups, RSS feeds for updating users on new content, Wikis for collaborative data sharing and Facebook to promote their organizations and public image and provide information to citizens (UK Central and Local Government and US Central and Regional Government and European central and Asia) 92.5% have adopted Facebook, 86.7% have adopted Twitter, 74.7% have adopted YouTube, 20.2% use blog and only 15.7% have adopted Flickr; RSS feed 73.3%</p>	<p>Carim and Warwick, 2013; Meijer and Thaens, 2013; Prajapati and Sharma, 2013; Oliveira and Welch, 2013; Reddick and Norris, (2013; Sivarajah, 2012; Bonson et al, 2012), Mossberger, 2012; De Saulles, 2011, Dadashzadeh, 2010; Anttiroiko, 2010; Kuzma (2010), Molchany and Lasich (no date p15), Panagiotopoulos et al, 2014; Mainka et al, 2014</p>

		<p>Social media users are mostly social activist participants who are already interested in common issues and affairs for example 40% of adult Internet users have gone online for raw data about government spending and activities and 14% look online to see who is contributing to the campaigns of their elected officials and 85% of Twitter users cite their participation in community groups</p>	<p>Kavanaugh et al, 2012; Smith, 2010; Warren et al, 2014; Nam, 2012; PEW Internet &amp; American Life Project, 2010, 2012,2013, Nam, 2011; Alexandros Dais, Mara Nikolaidou, and Dimosthenis Anagnostopoulos, 2013</p>
<p>Social media and citizen engagement</p>	<ul style="list-style-type: none"> <li>• citizen engagement with public authorities</li> <li>• Social Media and collaborative government</li> </ul>	<p>Social Media can contribute to mobilize citizens to participate in online civic engagement with public authorities: Facebook 91% (M=3.39), Twitter 59% (M = 2.44), YouTube 50% (M=1.35), Google Analytics 36% (M=1.98), Google Alerts 36% (M = 2.01), Google+ 28% (M=1.67), LinkedIn 28% (M=1.54), Flickr 21% (M=1.40), Blogs 14% (M=1.41)</p>	<p>Graham and Avery, 2013; A.M Warren et al, 2014; Mossberger, 2013; Mergel 2013; Zavattaro &amp; Sementelli, 2014; Molchany and Lasich p22 (no date), Khasawneh and Abu-Shanab, 2013</p>
<p>Citizens attitude towards Web 2.0 tools</p>	<ul style="list-style-type: none"> <li>• Social Media users motivations to interact with government</li> <li>• Facilitating public dialogue between public authorities and social media users</li> </ul>	<p>Citizens use social media technologies to not only interact with government agencies but also to interact with each other and with elected officials. 31% of USA online adults used social media tools such as</p>	<p>Smith, 2010; Duggan Ellison, Lenhart, Lampe, Madden, 2014; Pacquette and Yates,2011</p>

	<ul style="list-style-type: none"> <li>• Government Agency use of social media</li> <li>• Social media use by citizens to monitor government activities</li> <li>•</li> </ul>	<p>blogs, social networking sites, and online video as well as email and text alerts to keep informed about government activities</p> <p>52% use two or more of the social media sites measured (Facebook, Twitter, Instagram, Pinterest, and LinkedIn)</p>	
		<p>Social Media users' motivations to interact with e-government is based on individual needs and circumstances and also receive regular information and services across social media platforms which results in an increase in their satisfaction and trust in government e.g. 86% report they would use Facebook, 28% would use Twitter, and 11% would use a blog to let others know they were safe in a national emergency situation</p>	<p>Kavanaugh et al, 2012; American Red Cross, 2009; Nam 2014; Osatuyi, 2013; Nam, 2012; Zavattaro &amp; Sementelli, 2014; Bertot, Jaeger &amp; Glaisyer, 2010</p>
		<p>Governments need to persevere to educate citizens about various ways to gain services and encourage them to use the most relevant and efficient social media platform e.g. 69% of state governments are currently working towards educating citizens on how to use social media tools to</p>	<p>Nam, 2014; Sandoval-Almazon &amp; Gil-Garcia, 2012; Reddick and Norris, 2013; Zavattaro &amp; Sementelli, 2014; Chang and Kannan, 2009; NASCIO Social Media Working Group, 2010</p>

		interact with their services.	
Web 2.0 technologies for government – citizen communication	<ul style="list-style-type: none"> <li>• Social Media activity</li> <li>• Reaching larger population of citizens</li> <li>• Drawing users attention to the social media activities in government</li> </ul>	Government agencies experience high user participation with social media technologies, such as Twitter, Facebook, RSS feeds, and YouTube – this is a starting point which indicates engagement and success with getting individuals to social media applications: (95% use Facebook; 78% use Twitter; 63% use YouTube and 50% use LinkedIn)	Snead, 2013; Feeny, Welch and Haller, 2012;
		A combination of contact channels is most sufficient to increase e-government adoption, and therefore public authorities should provide several contact points through social media technologies e.g. 72% government sites use Twitter, 68% use Facebook, 71% use RSS feeds, 68% use a mix of videos, podcasts, live streams, news releases, and other types of media on their websites, 28% use blogs, 24% use Flickr for participation	United Nations (2012), Nam (2012), Sandoval-Almazan & Gil-Garcia (2012), Zavattaro & Sementelli (2014), Bertot, Jaeger and Grimes (2012), Bertot, Jaeger & Glaisyer (2010), Magro (2012), Changsoo Song (2013), Reddick and Norris (2013), Abdallah and Khalil (2009)
Social media Technologies for improved public services	<ul style="list-style-type: none"> <li>• How can social media assist in improved public services?</li> <li>• Social media technologies</li> </ul>	Web 2.0 has allowed the government to make more explicit efforts to reach out to citizens and facilitate ongoing interaction	Mossberger, 2013; Graham and Avery, 2013

	<p>facilitating in government activities</p> <ul style="list-style-type: none"> <li>• Participation, Trust, Transparency, Co-production, Anti-corruption</li> <li>• Web 2.0 and Web 3.0 enabling citizens to be more active and participative</li> </ul>	<p>through alerting and broadcasting information on various Web 2.0 applications. For example, the interactive tools used by US local governments were Facebook Link which was 13.3% in 2009 and increased to 86.7% in 2011; YouTube link was 16% in 2009 and increased to 74.7% in 2011, Twitter was 25.3% in 2009 and increased to 86.9% and RSS Feeds was only used by 56% and increased to 73.3% in 2011</p>	
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#### 4.1.4 Challenges and Limitations of social media and in e-government

Classification	Features	Key Findings	References
Information and Technical threats	<ul style="list-style-type: none"> <li>• Data Loss</li> <li>• Reconnaissance</li> <li>• Misuse of data</li> <li>• Content threat</li> <li>• Data quality and Integrity</li> <li>• Data Protection</li> <li>• Information disclosure</li> <li>• Security</li> <li>• Viruses and Malware Scams</li> </ul>	Reliability of the information published by governments	Kavanaugh et al, 2012; Bertot, Jaeger and Hansen, 2012
		Hackers, Privacy and information security, viruses, malware and scams	Bertot, Jaeger & Hanson (2011), Bertot, Jaeger & Glaisyer (2010), Kool and Wamelen (2009), Freeman and Loo (2009), Bekker et al (2013), Millard (2010), Joseph (2012); Kim n, Ok-RanJeong, ChulyunKim, JungminSo, 2010; Chen, 2009; Cosoi, 2011
		Reliability of the network, due to the huge volume of the social media data stream, it is a challenge to quickly analyse the collected information from different	Picazo-Vela et al, 2012; Kavanaugh et al, 2012; Lee and Kwak, 2012;

		sources and to make a decision based on the analysis	
		Blocking of social networks by government and public organizations should be open about their monitoring practices towards social media users	Picazo-Vela et al, 2012; Bekkers et al, 2012
		Internal, confidential information is leaked from within a government agency via social media platform	Lee and Kwak, 2012; Joseph, 2012; Bertot, Jaeger, Munson and Glaisyer, 2010; Bekkers et al, 2013; Bertot, Jaeger and Grimes, 2010; Everett, 2010
		Fake profiles, and trust, confidence and distrust in social media	Rashed, Renzel, Klamma, Jarke, 2012; Karahasanovic, Petter Bae Brandtzæg, 2009
		Security, Identity deception and privacy issues in Social Networks and access control policies	Squicciarini & Sundareswaran, 2009; Tsikerdekis and Zeadally, 2014; Chen, 2009; Everett, 2010; Kuzma, 2011; Szongott and von Voigt, 2013
		Access to Information	Weir, Toolan, Duncan Smeed, 2011

#### Digital Divide

Classification	Features	Key Findings	References
Digital Divide	<ul style="list-style-type: none"> <li>Sustaining public engagement</li> <li>Being able to reach a wider audience for public feedback to policies and rule</li> </ul>	Citizens access to social media technologies to interact with e-government only 30% of population with access to internet	Bertot, Jaeger and Grimes, 2010; Bertot, Jaeger, Munson and Glaisyer, 2010; Picazo-Vela et al, 2012; Joseph, 2012; Bertot et al, 2010; Bertot, Jaeger,



	making		Hansen, 2012; Chen, 2009
		A problem still remains of full engagement between citizens and government websites to increase transparency and decision making processes to encourage online participation, including enhanced interaction with citizens through social media sites such as Facebook and YouTube pages, therefore training is needed for engaging in usability, functionality, and accessibility testing to ensure the extensive capability to participate in e-government services and resources	Bryer, 2011; Katz and Halpern, 2013; Ellison and Hardey, 2013; Zheng and Zheng (2014), Landsbergen (2010) Bertot et al, 2010; Lee and Kwak, 2012;
		There is a need for a community-based public venue that ensures access and provides assistance for a widespread use of social media technologies for open government	Bertot, Jaeger, Munson and Glaisyer, 2010; Bertot, Jaeger and Hansen, 2012; Lee and Kwak, 2012;

#### Privacy

Classification	Features	Key Findings	References
Privacy	<ul style="list-style-type: none"> <li>• Trust</li> <li>• Location Awareness</li> <li>• Lack of Awareness</li> <li>• Confidentiality</li> </ul>	Ensuring that government transactions that transpire through social media technologies are private and confidential	Bertot, Jaeger and Hansen, 2012; Lee and Kwak, 2012;

## Legal

Classification	Features	Key Findings	References
Legal	<ul style="list-style-type: none"> <li>• Cybercrime &amp; Hacktivism</li> <li>• Accountability</li> <li>• Manipulating citizens to their own needs</li> <li>• Policies and lack of adequate policies</li> <li>• </li> </ul>	Many of the existing policies do not effectively address the technological volumes, operations, or functions of social media.	Jacobson and Howle Tufts (2012), Picazo-Vela et al, 2012; Sobkowitz et al, 2012; Lee and Kwak, 2012;
		Potential intellectual property and copyright infringements	Bertot, Jaeger, Munson and Glaisyer, 2010; Picazo-Vela et al, 2012
		Interaction with social media include managing different ways that the public can report a problem to authorities	Kavanaugh et al, 2012; Bertot, Jaeger and Hansen, 2012; Picazo-Vela et al, 2012; Lee and Kwak, 2012

## C.2 Tabular Results for photo and video tools

### 2013 Do you ever post PHOTOS that you, yourself, have taken to any kind of website?

	Frequency	Percent	Valid Percent	Cumulative Percent
Yes	367	5.9	43.1	43.1
No	482	7.8	56.6	99.6
(DO NOT READ) Don't know	2	.0	.2	99.9
(DO NOT READ) Refused	1	.0	.1	100.0
Total	852	13.8	100.0	

### 2013 Do you ever post VIDEOS that you, yourself, have taken to any kind of website?

	Frequency	Percent	Valid Percent	Cumulative Percent
Yes	164	2.7	19.2	19.2
No	686	11.1	80.5	99.8

(DO NOT READ) Refused	2	.0	.2	100.0
Total	852	13.8	100.0	

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**2012 Do you ever post PHOTOS that you, yourself, have taken to any kind of website?**

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	Frequency	Percent	Valid Percent	Cumulative Percent
Yes	320	5.2	40.1	40.1
No	479	7.8	59.9	100.0
Total	799	12.9	100.0	

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**2012 Do you ever post VIDEOS that you, yourself, have taken to any kind of website?**

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	Frequency	Percent	Valid Percent	Cumulative Percent
Yes	128	2.1	16.0	16.0
No	670	10.9	83.9	99.9
(DO NOT READ) Don't know	1	.0	.1	100.0
Total	799	12.9	100.0	

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### C.3 Tabulated Demographic profiles of social media users

#### Desktop Social media use

Social Media Platform		Facebook	Google+	LinkedIn	Twitter	Pinterest	Instagram	Tumblr
<b>All online users</b>		<b>61%</b>	<b>33%</b>	<b>20%</b>	<b>16%</b>	<b>12%</b>	<b>10%</b>	<b>4%</b>
Gender	Male	56%	31%	20%	17%	5%,	10%.	4%
	Female	66%	32%	18%.	14%	16%	9%	5%
Age	18-29	86%			25%	13%	18%	9%
	30-49			26%				
	50-64		33%					

Education Level	65+							
	Less than high school/high school grad							
	Some College	66%						7%
	College graduate		40%					
	University graduate				18%			
	Postgraduate Masters			32%		26%	21%	
	Postgraduate Phd/Doctorate							
	Job Income							
	Less than 30,000	74%						10%
	35,000 – 50,000							
Employment Status	50,000-75,000		38%	40%	23%	14%	18%	
	80,000+							
	Full time			26%	17%			
	Part time	66%				11%	15%	5%
	Not employed							

#### Mobile social media use

Mobile Social Media	Facebook	Google+	LinkedIn	Twitter	Pinterest	Instagram	Tumblr
<b>All mobile users</b>	60%	(47%),	37%),	(68%),	(33%)	79%	(29%).

Gender	Male	64%	40%	40%	66%	22%	78%	36%
	Female	56%	34%	34%	69%	36%	79%),	24%
Age	18-29	79%	65%	43%	74%),	53%),	91%),	
	30-49							
	50-64							
	65+							67%)
Education	Less than							
Level	high							
	school/high							
	school grad							
	Some College						89%)	
	College				75%			50%)
	graduate							
	University					60%),		
	graduate							
	Postgraduate			50%				
	Masters							
	Postgraduate	80%						
	Phd/Doctorate							
Job Income	Less than							
	30,000							
	35,000 –						92%).	

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	50,000							
	50,000-		62%).	57%).		63%		50%)
	75,000							
	80,000+	83%			91%).			
Employment	Full time	68%	57%)	40%)	70%	43%)	(78%)	33%)
Status	Part time							
	Not employed							

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#### C.4 Results for Social media and trust in government organizations

A one way between-subject multivariate analysis of variance was carried out to assess the impact of trusting government organizations to post information and alerts on social media sites such as Facebook and Twitter. The between-subjects factor comprised of 2 ratings of how important it is for government agencies to disseminate information on social media: very important and quite important. The dependent variables comprised of three levels of government organizations and the trust for each one: local government, state government and federal government. Assumptions of homogeneity of variance – covariance matrices and equality of variance were confirmed, and moderate correlations were found amongst the dependent variables. There was a statistically significant difference between the two ratings on the combined dependent variable social media importance for government communication  $F(3, 1524) = 3.62, p < .0005$ , Wilks' Lambda = .9, partial  $\eta^2 = .01$ . Analysis of each individual dependent variable, using a Bonferroni adjusted alpha level of .017, showed that there was a statistically significant trust towards the federal

government in the importance of using social media to post information to the public,  $F(1, 1526) = 6.75, p < .005$ , partial  $\eta^2 = .00$ . The two dependent variables, trust within state and local government, showed no statistically significant contribution for trusting the organization and having a high importance for the officials to post information on social media sites: state government  $F(1, 1526) = 0.01, p < .940$ , partial  $\eta^2 = .00$  and local government trust,  $F(1, 1526) = 0.03, p < .858$ , partial  $\eta^2 = .00$ . The mean score for participants who trust the federal government and think it is highly important for them to post and alert information on social media sites was lower ( $m = 2.819, SD = 1.13$ ) compared to those who think it is somewhat important ( $m = 2.964, SD = 1.05$ ).

Table 16 The level of importance to trust government agencies using social media technologies

Dependent Variable	Level of importance	<i>df1</i>	<i>df2</i>	<i>F</i>	Mean	Std. Error	<i>P</i>	$\eta^2$	95% CI	
									Lower Bound	Upper Bound
Trust in the federal government	Very Important	1	1526	6.568	2.819	.039			2.742	2.896
	Somewhat Important				2.964	.040	.009	.00	2.886	3.042
Trust in the state government	Very Important				2.860	.038			2.785	2.935
	Somewhat Important	1	1526	.009	2.864	.039	.940	.00	2.787	2.941

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Trust in the	Very				2.713	.037			2.641	2.785
local	Important									
government	Somewhat								2.631	2.777
	Important	1	1526	.739	2.704	.037	.858	.00		

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### C.5 Results for using social media to interact with government organizations

In regards to online adults using social media tools to engage with government organizations, 9% followed or become a fan of a government agency or official through their page on a social networking site, 13% have read the blog of a government agency or official in the past 12 months, 15% watched a video online on a government website and in the past 12 months 7% have followed a government agency or official on Twitter. Following on, likewise 7% upload photos or videos online about a government policy or public issue, 20% of participants who have followed a government agency or official on a social networking site, have also posted comments on their page, 12%, who said that they read the blog of a government agency or official, have also posted comments on their blog. Finally, 13% who said that they have followed a government agency or official on Twitter, have also communicated directly with an agency or official using Twitter and 13% join a group online that tries to influence government policies.

The study also indicated that 11% of respondents who read the blog of a government agency official have posted comments of their own to the same blog for others to read. The statistics also revealed that 20% of respondents follow a government agency social networking site and 11% posted comments on government agency blogs. Regarding such a pattern, Snead (2013) and Feeney, Welch and Haller (2012) pointed out that government agencies experience high user participation with social media technologies, such as Twitter, Facebook, RSS feeds, and YouTube – this is a starting point which indicates engagement and success with getting individuals to use social media applications.