

**Social Media and Diffusion of Innovation: Examination of Applicability of
Rogers Theory**

EXPRESS DISSERTATION

1.1. Introduction

Extant literature identifies that the diffusion of innovation is a social process and the adoption of a particular innovation by an individual is largely restricted by the behaviour of the social group (De Chowdhary et al., 2010; Lievrouw, 2002; Markus 1997). However, the degree of complexity associated with social networks and the associated heterogeneity of individuals make it more difficult to understand how such local correlations may have an impact on the final outcome of the process of diffusion. Furthermore, Grabovich et al., (2012) indicate that the concept of Rogers (1983) diffusion of innovation has evolved in a manner that the adoption of the same by a small group of members within a specific social system has evolved in the twenty first century. Bakshy et al., (2012) indicate that earlier the process of diffusion through any social network will take some time with more individuals adopting the idea until almost all members are open to the adoption of the innovation. However in recent times, this process of diffusion is much faster will improvements in communication and information systems between social networks.

According to Lindbeck and Fodrey (2010) workforce is looking for newer modes of communication within workplace. The authors indicate that the use of phone calls, letters and emails as traditional and widely used media of communication is being supplemented by other methods, especially by those of the younger millennial generation. The millennial generation is found to possess the constant need to be connected to others within their social pipelines and have access to digital information and collaboration. The use of social media like blogging, social networking and micro blogging as tools of communication has lead to the perception among practitioners that the diffusion of innovation theory can be applied to this extensive growth in social media and social media innovation (Lin and Liu. 2010).

According to NielsenWire (2010). a survey was taken and it was found that a majority of the people tend to spend almost twice as much time on social networking websites than any other online activity for their personal activities also. In addition to this, social networking is becoming the most preferred form of online communication replacing emails and instant messaging. In a period of one year, from June 2009 to 2010, the usage of emails dropped from 11.5% to 8.3%. Similarly, usage of instant messaging fell 15% in one year alone (Ostrow, 2010). The current study reviews existing literature on social networking and diffusion of innovation. The study then makes use of Roger's model in a bid to predict and understand social networking behaviour and intention.

According to Valente (1996) the diffusion of innovation through social networks can be explained by understanding the primary basis of social networks. Social networks are identified to be complex interconnections between people which provide patterns of friendship, advice, communication and support within the associated group of people in a social system. The earliest approach to adoption of how networks work as tools of diffusion was to identify the number of times any individual was nominated as a partner of the network in order to measure their opinion and leadership. This will then be correlated to the innovativeness as measured by an individual's time of adoption of the innovation (Rogers, 1962). Within this network, opinion leaders were defined as those people who were able to reach the largest number of people within their network and therefore were theorised to have the most amount of significance on the rate of adoption. It can be argued that such an approach to diffusion of innovation may not be applicable when considered from the context of social media.

Another approach to social networks and innovation diffusion which was more structural in nature is identified with regards to its relevance to social media. It is observed that apart from the opinion leaders within networks it is important for weaker ties, that is people who are loosely connected to others within the network to be present in order to promote diffusion. It is argued that in order to have diffusion across the system the weaker links ensure that the sub groups will result in greater reach (Valente, 1995). It can be argued that such a system may be more relevant with social media given the differences in strength of relationship between people.

1.2. Research Focus

A primary role of social networking websites is to connect individuals who have the same interests. Web 2.0 applications are the most important developments related to new media currently. Web 2.0 is an interactive platform on which many applications related to social media have been built. Web 2.0 has provided a platform that has enabled passive audiences to become into active participants (Kumar et al., 2009). According to Koren (2012), Web 2.0 has provided the necessary tools for individuals to create and share their own content. This is one of the main reasons behind the increasing popularity of Web 2.0 applications. One of the most important factors that contributed to the success of social media is the simplicity of the platform on which they were created. This simplicity helped users to adapt to web 2.0 applications quickly.

Social media is nothing but an online platform that is used by individuals to create and share ideas, opinions, experiences and content such as videos, photos, music etc (Lai and Turban,

2008). According to Constantinides et al., (2009) and Collin et al., (2011) social media platforms can be differentiated as:

- Wikis
- Podcasts
- Microblogs
- Forums
- Social networking sites
- Social bookmarking sites
- Blogs
- Content sharing sites

In comparison to traditional media, social media is a new technology that has quickly endeared itself to us. Furthermore, the growth and popularity of social media is being fuelled by the decision making process like all technology-based applications. A diffusion of innovation approach will aid in associating the decision, approval and expansion process.

A survey by Adobe and Ecoconsultancy identify that more than half the businesses around the world indicate that social media marketing is most effective as it has a good impact on clients as well as the client revenue. Furthermore, Enders et al., (2008) indicate that social networking sites like Facebook, blogs, podcasts, Youtube and twitter are growing in a logarithmic manner especially with respect to use of the same by employees to create links with their peers. The presence of professional networking sites like LinkedIn has further supported this with employees looking to network within their organisation and with the peers in their field by using the website as a tool. According to Forge (2011) Facebook increased their user number more than Google in the month of March 2010. This shows how many people are involved in social networking and given the rationale proposed in the previous section, the focus on social networking websites would be most ideal.

1.3. Research Questions

Given this background, the study will examine,

1. What is the relevance of Roger's innovation theory to the process of diffusion of social networking websites?
2. Is it possible to adopt a specific social networking website and associate the innovation process? What are the associated drawbacks?

3. What would be a conceptual model which researchers can apply to future social media websites in order to arrive at study relevance?

1.4. Growth of Social Networking: Need to Examine from Innovation Perspective

Business professionals first made use of networking in order to meet and greet their counterparts in various fields, to share a common interest, or to market a product or oneself. Hence, with the increasing growth of internet among home users, it did not take too long for individuals to network in the same manner. A lot of individuals believe that Facebook and MySpace were the pioneers of the term social media (Gil de Zuniga et al., 2012). This is not true, since a social scientist J.A. Barnes, in 1954, was the first person to actually coin the term 'social media' (Constantinides, 2009). The ancestry of social networking can be traced all the way back to the 1980's, when Bulletin Board Systems (BBS) services were being used commonly. These systems were predominantly text only systems and were used by people who had common interests. The Bulletin Board Systems (BBS) were quite popular in the 1980's and was popular in the 1990's as well. This started to change in the late 90's when CompuServe, an online file sharing service, allowed users to share and access content like news and events. The use and prevalence of emails also began to grow during this time. American Online (AOL) started a service that involved member based communities. Users who are a part of such communities could post certain information that would be accessible by others (Scott and Carrington, 2011).

People could also search for information within these communities. Classmates.com was one of the first true social networking sites that came into being in the year 1995 and this was followed by SixDegrees.com in 1997. SixDegrees included the ability to search for friends based on the profiles that people had created for themselves. This was followed by a site called Friendster in 2002, followed by LinkedIn and MySpace in 2003 (Nickson, 2009). According to Boyd and Ellison (2007), a number of social networking sites were launched in the year 2003. Facebook launched itself in 2004 and took two years before it was made available to all users. 2006 also saw the launch of another popular social networking tool, Twitter. Facebook became the world's most popular and largest social networking site with a total registered user base of 500 million people on July 2010 (Wortham, 2010).

Youngsters are more likely to use such social networking sites than older people, according to the Pew Internet and American Life Project. This does not mean the adult do not like to be active on the social networking scene as Lenhart (2009) discovered that 35% of American adults have a presence on the social networking sites. This is a four-fold jump in the number of adult users being part of social networking sites since 2005. Youngsters, especially

teenagers, are more likely to be part of social networking. A survey by the Millennial's (2008 cited in Folorunso et al., 2009) found that 41% of adults between the ages of 18 and 65 confirmed that they did have a presence on the social networking sites.

From the above analysis, it is understood that the spread of social media and its growth has been logarithmic which people of different demographics and races adopting social media tool as a source of innovation.

1.5. Perceived characteristics of innovation

Roger's innovation diffusion model has four basic features that is related to the widespread use of technologies (De Benedeto, 2010). According to Rogers (2007), grasping the concepts behind these features will greatly aid in making effective and efficient use of technologies. The four features of Roger's innovation diffusion model are compatibility, complexity, trialability, observability and the relative benefit (Rogers, 2010).

□ **Compatibility:** It refers to the extent to which an innovation is considered to be consistent with the needs of potential adopters, past experiences and existing value. Compatibility allows the individual to gain familiarity with the new ideas (Russel et al., 2012).

□ **Complexity:** It refers to the extent to which an innovation can be understood by an individual. If the individuals requires a lot of time to understand an innovation, then the innovation highly complex and this will negatively affect its rate of adoption (Rogers, 2010).

□ **Trialability:** It refers to the extent to which the innovation can be experimented upon for a limited time period. The individual trying out the innovation can aid in providing a purpose to the innovation and can help determine how the innovation works in real life situations. This trial will help in removing any lingering doubts about the innovation (Rogers, 2010)

□ **Observability:** It refers to the extent to which people can observe the results of an innovation. Some innovations are easy to understand since their results are easy to observe and comprehend. For others, it is not so simple. The ease of observability is directly proportional to the rate of adoption of the innovation (Rogers, 2010).

□ **Relative Advantage:** It refers to the extent to which an innovation is perceived as being better than the idea it supersedes. Economic profitability and social prestige are two of many ways in which the degree of advantage can be expressed. The higher the advantage, the better the rate of adoption of an innovation (Rogers, 2010)

1.6. Diffusion of Innovation (Social Media)

This section of the paper provides critical review of the process of diffusion of innovation, with the innovation being social media. The researcher will draw upon the views of different literature and then critically identify how the Roger's theory is applicable to social media.

Applications that are based on the internet have risen in popularity over the last decade with an ever increasing user base. Internet based applications have grown so popular that they are everywhere and have embedded themselves in all aspects of an individual's life. In the current world, people have become used to depending on internet applications for everything. Social media can be considered as a great innovation (De Choudhary et al., 2010). Hence, diffusion and increasing use of social media can be associated with each other in the context of decision making process for innovation.

Social media usage can be associated with individual needs, prior practices, norms and uniqueness of social system, when social media is considered as an innovation. The increasing popularity of social media is in turn creating awareness among non users and making people more curious about social networking (Kwak et al., 2010). Researcher contends that this leads to individuals wanting to know more about social media and attempting to learn about them as well. Individuals tend to experiment with the different kinds of social networking sites available to them. After this stage, the individual will become psychologically involved with the social media platforms. The individual will then consider the advantages and disadvantages of social networking and will make a decision on whether it is beneficial to them or not. Features like compatibility, complexity, trialability, observability and the relative benefit play an important role in persuading an individual to take to social networking (Koren, 2010). There is a way in which these characteristics can be handled in relation to the social media platforms.

The features that affect an individual's perception are considered in relation to social media, they refer to the ways in which social media is different from the traditional media and previously developed internet based applications (Folerenso et al., 2009). To further promote this view, the current study considers an example of such features associated with the user friendly structure of social media. Compatibility of an individual in relation to social media is increased if the person has prior experience with using the internet and internet based applications.

The complexity of an innovation also plays a role in its adoption. According to Rogers (1995), any innovation that does not require a person an inordinate amount of time to understand and grasp its functioning will have a higher rate of adoption. The simple and easy structure of social media and the lack of complexity will enable it to be adopted by number of individuals. In the case of complexity and trialability, both these features are closely related to one another. This is so as the lesser the complexity, the more the people will want to trial the innovation. Another important factor that makes it easier for individuals to trial out such social media platforms is their open nature (Kocak et al., 2013). Typically, social networking sites are free to use and this attracts a lot of individuals to it.

Observability is another factor that is a characteristic to the rate of adoption of an innovation (Rogers, 2010). Social media has grown in popularity and usage to such an extent that people will find it difficult to not to see it as part of their daily activities. Therefore the visibility of social media is extremely high (Folerenso et al., 2009). Social media is integrated with traditional media and an individual's social environment. This makes it very difficult to ignore.

Persuasion process also involves the relative advantage of economic profitability, social prestige and other benefits. The open and freely accessible nature of social media provides a big advantage economically in terms of communication and interaction among individuals (Kocak et al., 2013). In addition to this, individuals can get access to information free of cost while using social media based platforms (Chang, 2010). This provides a big economic profitability for individuals. Furthermore, social media also allows people to communicate and share their views and opinions without being charged for such services (Waters, 2010). It can be argued that this process provides a big boost to the attraction factor of social media. Social media also helps people gain more self confidence as it brings people closer and communicate more with each other (Kocak et al., 2013). All of these feelings can be considered as social prestige advantages of social media.

Thus, it can be seen that complexity, trialability, observability and the relative benefit have a very big role to play when it comes to persuading individuals to try out an innovation or idea. In the diffusion of innovation approach, the persuasion stage is followed by the decision stage (Kocak et al., 2013). The decision stage involves an individual either accepting or rejecting the innovation or idea after trying it out. Social interaction is an important factor that makes individuals want to try out social media (Chi ,2011). People can use social media to interact, communicate and feel part of a group or a community. Social media provides the opportunity to socialize and express about one's self (Kocak et al., 2013). Social media also provides a variety of entertainment which is another strong factor that makes users want to adopt social media. This in combination to the economic advantages and social prestige that

comes with using social media makes it a very strong and tempting factor for individuals to use social media. Furthermore, following a new trend could in itself be a factor for people to use new technologies. If a person decides to adopt an innovation or idea, then this step becomes the implementation step. In case the person decides to not adopt the innovation or idea after implementing or using the technology, then this reversal of opinion is called discontinuance. There could be many factors that could lead to discontinuance like abuse of privacy or the risks associated with the loss of privacy etc. According to Coursaris et al., (2010), social media is mainly based on conversation and gossip which by its very unethical nature, will cause friction and problems between individuals. The researcher will reiterate this view by stating that people share too much about their own private life on such sites.

Finally, Coursaris et al., (2010) reflect on the adoption stages associated with Rogers theory. If people feel that they like using social media and continue to use it, then that stage is called continued adoption. Similarly if people continue to reject an innovation, that stage is called as continued rejection. However, because of social media's popularity and widespread use, people may feel lack of it and as a result they may demonstrate adaptation behaviour which is called as later adoption.

From the above examination, it is clear that there is a significant association between social media diffusion process and the applicability of Rogers theory. The following section will examine a case analysis of Twitter.

1.7. Twitter case analysis

Twitter is a Web 2.0 based application that allows users to post and share short messages, no more than 140 characters, on the internet. Twitter is an international social networking application that is also free for the users (Kwack et al., 2010). The short messages are also known as 'tweets'. Twitter has been publicly well received and is well known for its ability to offer open conversations in a very easy and simple to use platform. In addition to this, Twitter also provides an ideal support platform for a wide variety of businesses and it does it all with incredible speed (Chang, 2010). 2009 was a landmark year for Twitter because 20 million people visited Twitter's home page, making it a 900% increase in the number of visitors from 2 million in 2008 (Gulati and Williams, 2011). Given this speed in growth of Twitter adoption by people across the world, this section will examine the relevance of applying the Rogers diffusion theory.

1.7.1. Twitter as an innovation

According to Rogers (2010), various innovations will have variable rates at which they are adopted. The rate of adoption depends on four basic characteristics, which are compatibility, complexity, trialability and observability. These characteristics have played a vital role in influencing the perception of users towards this social network.

Twitter is not one of the early social media platforms. By the time Twitter emerged onto the social networking scene, people had already got used to many social networking platforms like Facebook etc (Kwack et al., 2010). Hence, people were well aware of the advantages and capabilities of social networking. Twitter also provided speed and informative content which again made it easier for people to like and adopt it. Hence it was highly compatible in nature.

Twitter makes use of an extremely simple interface and makes use of basic text and icon to communicate and disseminate information (Chang, 2010). This allows users to quickly learn how to use Twitter and prevents users from being overwhelmed by technical IT tasks. These attributes made Twitter a relatively easy application to grasp and use. Hence its complexity is low.

Twitter is slightly different from other common social media platforms (Gulati and Williams, 2010). However, users have been used to different social media platforms over the years and hence users feel less uncertainty when using this service. This will aid in increasing Twitter's rate of adoption.

Today's world is well connected and information is provided in a number of different formats. Due to such effective communication channels and Twitter's popularity, it can be seen almost everywhere ranging from different media outlets to celebrity placements (Kwack et al., 2010). Furthermore, since the advent of the internet, communication has become easier and hence it is easier to share thoughts and promote applications. Therefore it is contended that users themselves have taken up the task of promoting and increasing Twitter's observability.

It is argued by the researcher that the popularity of Twitter is also because of its relative advantage over other forms of social media platforms such as personal blogs. Twitter acts as a micro blog as well as a real time social network. It's ease of use and popularity has made it the go to choice for sharing ideas and distributing news. Individuals find Twitter to be easier and faster to use and also to get information from. Furthermore, since Twitter is free

to use and it is being courted and promoted by celebrities, its relative advantage is quite high which in turn leads to a higher rate of adoption.

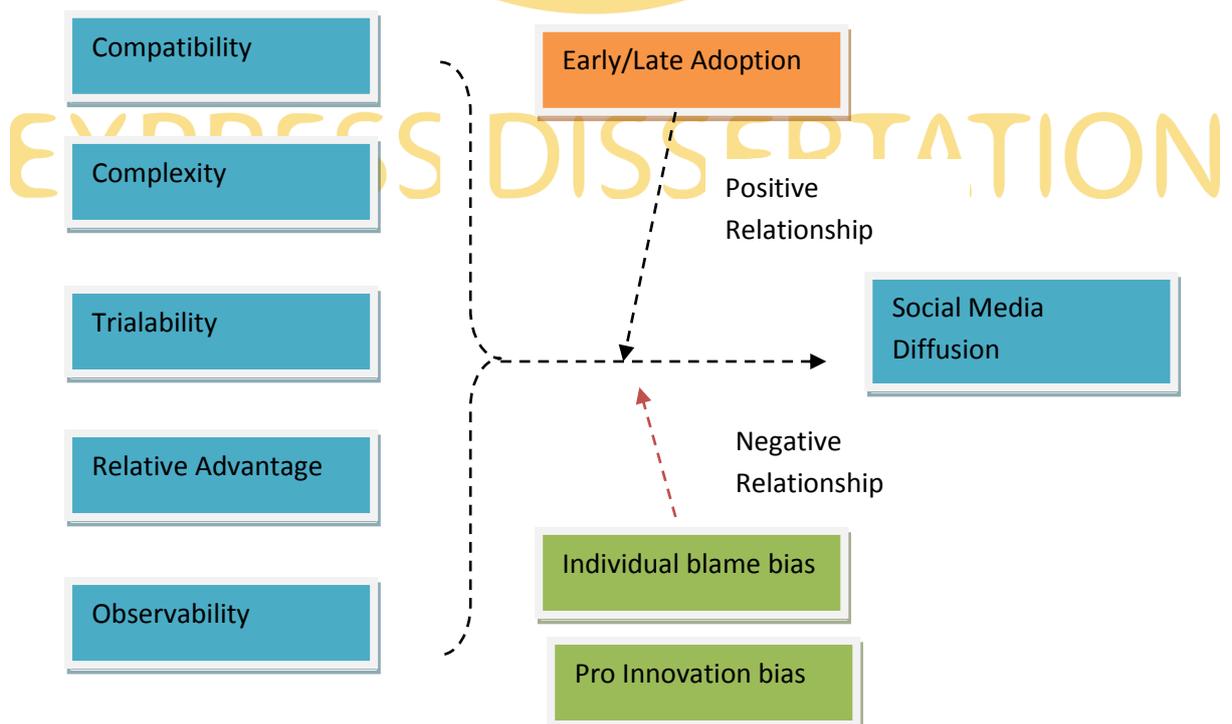
There is ample evidence to show how the diffusion theory can be applied to Twitter's high adoption rate. This theory also has certain disadvantages that can be shown using the example of Twitter as well. The limitations are:

Pro-innovation bias: This refers to the idea that innovation, like Twitter, should be adopted by everyone in the system. The popularity of Twitter may force people to overlook its limitations.

Individual blame bias: This refers to blaming an individual for his or her own problems rather than blame the system of which the individual is a part of. This bias leads to putting pressure on people who are not following Twitter even if they either do not like it or do not need it.

1.8. Research Model

The following model is proposed as a structure which can be adopted by any new social media or networking site which attempts to become part of the growing social networking platform.



1.9. Conclusion

In this research paper the researcher has attempted to provide a theoretical framework which helps in explaining the growth of social media and its diffusion from the perspective of diffusion of innovation approach. Future research in this area will benefit from the examples provided from the Twitter approach. Furthermore, future research which aims at determining the factors affecting the adoption or rejection decisions of social media should delve deeper into the early and late adoption and the associated possibilities of criticisms. It is concluded that by adopting such an approach the researcher has ensured that the adoption process of social media by users across the world is well understood.

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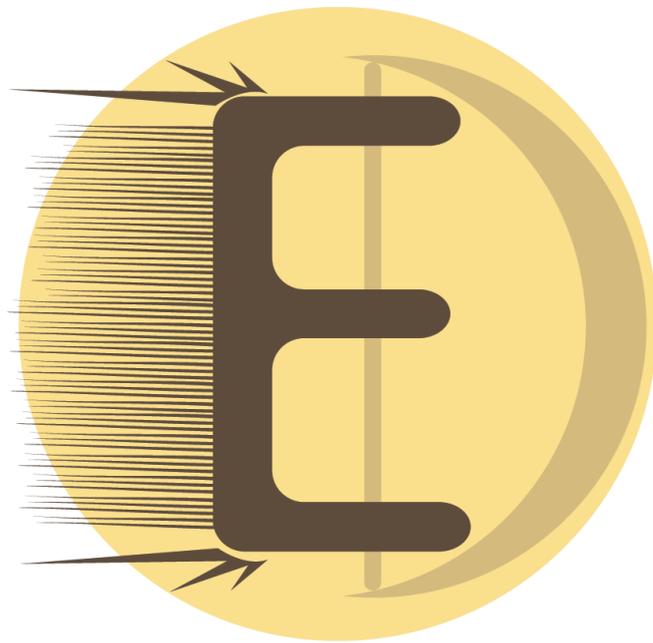
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