

HUMAN MOTIVATION PRINCIPLES AND HUMAN FACTORS FOR VIRTUAL COMMUNITIES

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Keywords: Social Network Services, Virtual University, Human Motivations, Human Factors.

Abstract: The main purpose of this study is to investigate, from a theoretical point of view, virtual universities in comparison with Social Networking Services (SNS). The theoretical framework constitutes of the Human Motivation Theory (HMT) and the Human Factors (HF) in which Facebook as the most popular SNS is compared with virtual university in general. The main features of these technologies were compared in order to consider whether they comply with mentioned theories. Using an exploratory research methodology, this study concludes that SNSs are more adopted with HMT than virtual university. In the other word, Facebook applications as the most popular virtual community with over 500,000,000 users worldwide, is more compliant with HMT to gratify users' needs. Also, from the perspective of human factors, it is more successful than the virtual university.

1 INTRODUCTION

Virtual university like all types of educational entities has challenges as well as significances. Although it may overcome time and place barriers (Barbour and Reeves 2009); (Tabatabaie, 2010) where the students can be educated wherever and whenever suits them, it lacks the most important component of socialization, which is face to face communication (Burbles, 2004). This social interaction as Vygotsky argued in his learning theory, plays a fundamental role in the process of human development (Schank, 2000). All kinds of virtual communications happen through 0/1 binary codes, and it might affect the efficacy of human interactions. However, in spite of this challenge, social network services such as Facebook are able to successfully attract millions of people.

In this research, using Human Motivation Theory (HMT) and Human Factor (HF) principles, we are going to investigate why Facebook can be a large social community but virtual universities cannot. The literature review examines virtual universities, Facebook, HMT and HF. Then, the compliance of these interaction media (Facebook and virtual universities) with HMT and HF will be considered and finally the conclusion will be presented.

2 BACKGROUND

Advances in information and communication (ICT) technologies have affected our instructional systems as have many other aspects of life in the new millennium. For instance, some tertiary educational institutions have transformed to a new form which is called Virtual University. There are a variety of definitions for VU that mostly refer to virtual university as a web-based learning environment without any physical structure for higher education students. In this kind of university, synchronous and asynchronous technologies have been employed to transfer instructional materials to students and to provide learning opportunities for them (Ryan et al., 2000). The main purpose of establishing VU is to enable higher education access for people who cannot satisfy their educational needs in conventional universities. The history of this technology dates to the 1960s, when The Open University as the first successful virtual university in the world was founded (Anon, 2011). Despite the OU's efforts in Australia to retain students most of its new students (60%-70%) give up after one unit (Deden, 2005); (Jones et al., 2004) thereby indicating very high attrition rates amongst the students. The low rate of enrolment, withdrawal

after the first year and the lack of continuance intention are considerable issues in virtual universities not only in Australia, but also in other parts of the world (Carr 2000); (Joo et al. 2011); (Lee 2010). The most likely demand for a VU would be in developing countries with a dense population and lack of sufficient higher education institutions and infrastructures. However, evidence shows that students prefer to enrol in conventional universities instead of virtual universities despite the flexibility and other benefits of a VU (Sarлак and Abolhasani, 2008).

In contrast however, Online Social Network Sites (SNS) as another type of virtual communities have experienced an unprecedented growth in the recent decade and are emerging as the web's top application (Chiu et al., 2008). Taken on the basis of head count of membership, Facebook and Twitter are the largest SNS communities on the earth.

2.1 Facebook as a Successful SNS

Facebook is the most popular SNS, which according to Alexia's website is the most visited SNS in the world. In general, it is ranked after Google as the second most visited global website. The growing success of Facebook is undeniable although the drivers which are behind its growth are not clearly determined and understood. Little academic research has been conducted in this area. A thorough review of the existing literature of SNSs reveals the following reasons as the key drivers of Facebook's success:

Privacy. Privacy has emerged as a crucial issue in social network environments (Shin, 2010). Westin (as cited in Weiss, 2009) has defined privacy as "being the claim of individuals, groups, or institutions to determine for themselves when, how, and to what extent information about them is communicated to others". Facebook has enabled all users to decide what and how much they want to share. In other words, they control who sees their information. They can share their private information with friends, friends of friends or everyone in the Facebook community. Furthermore, users can remove themselves from Facebook search results and even more, from results provided by search engines such as Google. Hence, everyone can share or protect what she/he wants (Hart et al., 2008). So it can be claimed that Facebook provides adequate privacy for all users.

Trust. In human interactions, trust has always been an important factor in exchanges involving risk

(Shin 2010). Facebook has the reputation of being a trustworthy social networking website more so than other SNSs (Fogel and Nehmad, 2009) due to strong regulatory and administrative controls. In considering trust on social network sites, researchers indicated that trust may affect what people are willing to share with others. It has been proven that Facebook users have greater trust in Facebook than users have in other SNSs. Therefore, Facebook users are more willing to share information on the site (Dwyer et al., 2007).

Simplicity and Human Interface. Facebook's user interface is completely self-explanatory and easy to use. The site elements make it very easy for users to navigate and find the desired features very quickly. Research findings revealed that Facebook is an easy to use social networking site, enabling users to effectively communicate with friends (Gomez et al., 2008); (Hart et al., 2008)

Maintaining Social Capital. Research results indicate that most users use Facebook as a surveillance tool for maintaining or intensifying their offline relationships. Facebook members use this site to manage friendships that were initiated offline (Hoadley et al., 2009); (Krisanic, 2008); (Lampe et al., 2006); (Lampe et al., 2007); (Ross et al., 2009); (Steinfeld et al., 2008). This offline to online movement is very different from the early social networking services and other virtual communities. Ellison et al. (2006) argue that there is a significant relationship between Facebook use and high school connections that indicates how online social networks help maintain relationships as people move from one offline community to another.

Entertainment. Most Facebook users join SNSs just for fun. They use Facebook to amuse themselves and pass the time in an enjoyable way. Scholars who investigate the usage of digital media and motivation argue that one of the main motivations driving people to use web-based media is entertainment (Papacharissi and Rubin, 2000). As research findings indicate, since Facebook use is so widespread, the major predictor motive is entertainment (Clark et al., 2007); (Krisanic, 2008).

Self-presentation. Kramer and Winter (2008) declared that impression management is one of the main motives for actively participating in social networking websites. It means that a given user joins Facebook to influence other users' perception of him/her. Facebook has provided a completely new method of self-presentation (Mehdizadeh, 2010) where Facebook users can publicize their events,

news and interests in different ways to influence others.

Financially Affordable. Everyone can join Facebook for free. There is no real pecuniary penalty for leaving Facebook unlike some virtual communities, which result in non-users being more likely to try it for the first time (Gomez et al., 2008).

2.2 Human Motivations

There are many different learning theories which trace and model the process of human behaviour. A well-known theory in this regard is Maslow's theory which is categorized as a motivational theory in educational psychology. Motivational theories address people's potential and capabilities as they make choices and seek control over their lives (Schunk, 2008). The main purpose of these theories is to recognize and provide an explanation for people's behaviours. Hence, people's feelings, thoughts and desires should be considered in relation to these theories.

Abraham Maslow's motivation theory holds that people are motivated by their needs. He therefore tried to depict and categorize the main human needs. The theory is usually represented as a hierarchy with five levels of needs.



Figure 1: Maslow's hierarchy of needs.

According to this theory, the first level of needs, physiological, involves necessities such as air, food, water, sex, sleep and generally everything that the physical organism needs to remain alive. If these needs are met, people can continue their lives and strive to satisfy the second level of needs which concern the security of their environment, employment, health and so on. Once these essential needs are adequately satisfied, belongingness needs become essential. These needs constitute having family, friends, and close relationship with other people. This level of needs drives people to participate in different social activities and to join

various community activities. The fourth level of Maslow's hierarchy represents esteem needs which include two different categories: self-esteem (comprising self-esteem, achievement, confidence) and external esteem (comprising of respect of others, social status, fame, recognition and so forth). Because of these needs, people strive to differentiate themselves from others, achieve their goals and be confident.

These four levels of needs are considered as deprivation needs. Therefore, if these needs are not met adequately, it causes deficiency and as a result, people strive to satisfy these needs. The deficiencies can harm mental health in the long-term (Schunk, 2008). According to this theory, the highest level of human needs is self-actualization or self-fulfilment, that is, to achieve all one's potentialities. In other words, self-actualization refers to the full realization of one's potential (Maslow, 1954).

2.2.1 Human Motivations and using Facebook

As the name of 'Social Networking Services' implies, SNSs tend to gratify the third level of human needs which is social needs; however, Facebook can actually be used to meet esteem needs (level 4) as well. Krisanic (2008) tried to identify social and psychological needs which are gratified through using social networking sites especially Facebook. As she remarked, the interactive nature of Facebook provides an incredible range of choices for audiences. They can contribute in this virtual community in different ways; sending and receiving messages, sharing media as movies, leaving comment on other's messages and photos, and so forth.

People strive to prevent feelings of alienation and loneliness. This strive includes both giving and receiving love, affection and the sense of belonging (Simons et al., 1987). In this regard, Facebook enables users to experience being in a big community and receiving love virtually. As in the real life, people also are motivated to satisfy their needs through the virtual life (Benjamin et al., 2008). Table 1 summarises and presents how users meet their needs by using Facebook.

2.2.2 Human Motivations and Virtual University

According Human Motivation Theory people contribute to different real or virtual communities to fulfill one of their main needs which is the belongingness need. However research findings

Table1: Human motivations and using Facebook.

Level of Needs	How it is gratified		Using Facebook to meet the needs
Level 3 Belongingness	having relationship with others belonging to groups be accepted by others giving and receiving love		<ul style="list-style-type: none"> • finding old friends • finding new friends • joining virtual groups • giving and receiving gifts • sharing thoughts and feelings • sharing interests • interacting with others • develop the social status • making own society
Level 4 Esteem Needs	Internal	having self-respect being self-confidence achievement accomplishment mastery of a task independency	
	External	be accepted and valued by others respecting to others be respected by others recognition acquire social status acquire power and authority	

revealed that people who join to the virtual university communities cannot meet this need and it is mentioned most virtual students suffered by feeling of isolation and loneliness (Brown, 2001); (McInnerney and Roberts, 2004); (Shen et al., 2008); (Wang and Newlin, 2000). This frustration can affect student engagement with educational material in a virtual environment (Lee and Zailani, 2010).

As mentioned in HMT, self-actualization is another important need which people strive to fulfill. In order to realize their full potential and to become what they potentially can be, people choose different options like study, sport, professions, etc. So it can be claimed that some people who choose to study at virtual or conventional universities, want to fulfill themselves. If virtual students can achieve their educational goals through a virtual university, they can meet their self-actualization needs. However, in virtual universities student achievement can be affected by some frustrations like sense of isolation (Rovai and Wighting, 2005), low quality of learning experience, communication barriers, and so on. The higher student dropout rate from virtual universities, compared with that in conventional universities indicates that learning achievement and student satisfaction in this kind of university are not adequate (Carr, 2000). According to evidence from the literature, it can be said that virtual universities do not comply with HMT. In the other words, students in virtual learning environments cannot fulfill their social and self-actualization needs.

2.3 Human Factor

There are a variety of terms referring to the same concept including Human Factors (HF), Software Human Factors (SHF), and Software Usability Engineering (SUE), etc. Although in the literature these terms are used synonymously, the Human Factors has emerged as a major part of software usability engineering which is related to developing software compatible with user interface. This field of study, as Mayhew (2003) discussed, can be directly applied to website development, because a website is a kind of software with a different platform. The number of people who browse the World Wide Web is enormous and differ greatly in terms of user characteristics such as abilities, computer literacy, preferences, and language, so these characteristics are considerable for web designers. Sears (2003) listed the most important issues related to human factors in web development as:

- Age related problems;
- Cognitive, perceptual and physical disabilities;
- Cultural and language issues;
- Technological barriers such as screen size and network connection.

He discussed how web designers should deal with each issue when they develop websites. Kurosu (2003) focused on culture as one of the major human factors to consider when developing virtual environments and launched guidelines on international as well as localization websites design.

All these sort of issues and solutions involve the human factors as it relates to user interface and design standards which facilitate information delivery on the World Wide Web (Ratner, 2003).

2.3.1 Human Factors and Facebook

The popularity of social networks, especially Facebook, encouraged many researchers to investigate this appealing technology from different perspectives. There are a number of researches investigating Facebook usability and user interface. For instance, Fox and Naidu (2009) measured the usability of the three most popular social networks: Facebook (www.facebook.com), My Space (www.myspace.com) and Orkut (www.orkut.com). To evaluate their usability, they considered user satisfaction, navigation efficacy, success and difficulties in doing tasks in each website. Their results revealed that Facebook in terms of human factors and usability is more successful than the other social websites. In another research project, Hart et al. (2008) conducted a heuristic evaluation to find how Facebook as a popular social network considered usability (human factors) guidelines. They argued that, although Facebook does not comply with traditional usability guidelines, its performance is excellent in providing desirable experiences for its users and it complies with several emotional and cognitive human features such as curiosity, self-expression, and so on.

2.3.2 Human Factors and Virtual University

It is proved that incorporating emotional and cognitive human factors in online learning environments can improve the effectiveness of these virtual learning systems (Mourlas et al., 2009). Although motivation as one of the human factors can be increased by the convenience and flexibility of a virtual learning environment (Piccoli et al., 2011).

Research findings show that the structure of communications and educational programs in virtual classrooms are inadequate in terms of increasing or even maintaining students' motivation. Online learners mostly experience a lack of the sense of community which is known to be one of the factors influencing students' motivation and goal achievement in virtual courses (Rovai, 2002; Sadera et al., 2009). Sadera et al. (2009) argued that the learning achievement as well as student retention in online education will be improved by increasing the sense of community among these students. Their survey results indicated that there is a significant

relationship between students' achievement and their sense of community in online education environments. The results of this study confirm the findings of Rovai and Wighting (2005) which highlighted importance of a sense of community in online students' achievement and student retention in virtual learning environments. Researchers also revealed that in a virtual learning environment, students encounter more limitations such as lack of immediate feedback, ambiguity of online instructions and technical problems (Hara and Kling, 1999).

These challenges can influence virtual universities' student retention rates and learning achievement. In spite of the challenges associated with virtual universities, this kind of educational system nevertheless provides a flexible and convenient learning environment which can be desirable for those who cannot attend traditional classrooms (Barbour and Reeves, 2009); (Johnston, 2007); (Tabatabaie, 2010). With the development of there are various technology enhanced solutions which the VU's could make use to address the shortcomings identified with VU's. This would enable the growth of virtual universities.

3 CONCLUSIONS

In this research, two virtual communities including Facebook and a virtual university are investigated through existing literature to determine the extent of their compliance with human motivations principles and human factors guidelines. Generally, according to our research findings (Table 2) it can be concluded that Facebook as a virtual community is more successful than virtual university. This success can be attributed to the structure of this online virtual community which has developed a pleasant environment for users in which they can fulfill their social and self-esteem needs. It has been proven that Facebook users have a strong sense of community which encourages them to maintain their relationships between each other.

Furthermore, effective navigational tools and adherence to usability guidelines and user satisfaction in this SNS has engendered a desirable environment for users. However, virtual universities because of some frustrations such as lack of motivational programs, sense of community and immediate feedback, as well as technical barriers and ambiguity of instructions, fail to comply with guidelines regarding human factors. Also, virtual universities cannot help their learners to fulfill their

Table 2: Compatibility of two virtual communities (VC) with HF and HM theories.

Theory VC	Human Motivations	References	Human Factors	References
Virtual University	<ul style="list-style-type: none"> - Cannot fulfill belongingness need (because of a sense of isolation) - Cannot fulfill self-actualization need (because of the quality of learning, low satisfaction, high dropout rate) 	Brown 2001, McInnerney et al 2004, Shen et al 2008, Wang et al 2000, Hara and Kling 1999, Carr,2000	<ul style="list-style-type: none"> - Lack of immediate feedback - Lack of sense of community - Lack of motivating programs - Ambiguous instructions - Technical problems + Convenience + Flexibility 	Rovai 2002, Sadera et al 2009, Rovai and Wighting 2005, Hara and Kling 1999, Johnston 2007, Barbour and Reeves 2009, Tabatabaie 2010
Facebook	<ul style="list-style-type: none"> + Giving a sense of community + Fulfill belongingness need + Fulfill esteem needs 	Krisanic, 2008	<ul style="list-style-type: none"> + Effective navigation tools + Considering user satisfaction + Considering usability guidelines + Compatibility with emotional and cognitive factors - Including some difficult tasks 	Foxand Naidu 2009, Hart et al 2008

social and self-actualization needs which are considered to be major drivers that encourage students to participate in these learning environments. A sense of loneliness, the perception of low quality learning, and low satisfaction of virtual students which leads to high dropout rates, are evidence that virtual universities have failed to comply with the human motivations.

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