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A systems approach to understanding the effect of Facebook use on the quality of interpersonal communication

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ABSTRACT

Social networking platforms such as Facebook have become integrated into the milieu of modern-day social interactions. Facebook, one of the most prominent social networking platforms globally, is widely used as a primary medium for communicating and networking for personal, professional and recreational purposes. To date, studies have focussed on developing an understanding of why people make use of Facebook. Limited studies have explored the effect of Facebook use on interpersonal communication. This paper then investigated the tension between the use of Facebook and the quality of interpersonal communication. From the literature, the need to belong, and the need for self-presentation, were identified as the two main set of complex relations that justifies why people use Facebook. Qualitative system dynamics modelling, specifically causal loop diagrams, was used to gain more insights on the tension between Facebook and the quality of interpersonal communication from the perspective of a potential Facebook user. This tension was represented by the trade-off arising when considering the amount of time spent on Facebook and interpersonal communication. It is argued in this paper that Facebook is not a sufficient substitute to interpersonal communication, as it tends to degrade the quality of interpersonal relationships. Future investigation will require developing a simulation model for a specific case to provide more insights on the extent of this trade-offs and potential intervention measures.

1. Introduction

Social networking platforms have become integrated into the milieu of modern-day social interaction. Facebook is one such platform, and is the most prolific online social networks of the contemporary era and the first of its kind in history. Created in 2004 in the United States of America by Mark Zuckerberg and a group of fellow Harvard University students, it reached 50 million users by October 2007 and an astonishing one billion monthly active users on 14th September 2012 from across the globe [1]. By the time Facebook reached one billion users, the median age of the active users was 22 years and the top five countries where people were connected were Brazil, India, Indonesia, Mexico and the United States [1].

Facebook enables users to create visible profiles with basic personal information; users are able to make available a wide range of personal details thereafter. The platform boasts a host of features facilitating virtual interaction that have the potential to be extended to offline environments. Some of these features include the friends list, the wall, status, events, messages, video, photos, pokes, chat, groups and like functionality, as describe by Nadkarni and Hofman [2]:

"The *friends* list is a crucial component of Facebook because it allows the end user to create a public display of links to connections which viewers can in turn click through, to traverse the network. The *wall* is a term given to the Facebook feature that functions as a bulletin board and allows other users to post personal messages directed toward the end user. The *pokes* function allows users to offer initial greetings to other users. *Status* allows users to inform their friends of their whereabouts

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and thoughts. The *events* feature enables users to plan meetings or events that they can extend invitations for. *Photos* and *videos* allow users to upload albums, photos and videos which other users can comment on. Communication with friends is accomplished through *messages,* which are public or private, but also through a chat feature. The *groups* feature allows users to create and join interest groups. The *like* functionality allows users to give positive feedback about preferred content."

Facebook's mission is to give people the power to share and make the world more open and connected [1]. The above-mentioned technical features shed light on the myriad of opportunities for engagement and sharing that Facebook makes possible in the virtual social networking space. In social network theory, a network is understood as a set of relationships [3]. The Facebook platform succeeds in incorporating a vast array of features that culminate in a rich set of network interactions and relationships. However, the networks established on Facebook are anchored in offline, real-life networks, relationships and connections, although the possibility of connecting with people outside of established networks is a distinguishing feature of the platform. Essentially, offline social networks are extending onto a virtual platform in a way that codifies, externalises and collates an individual's family, friends, acquaintances and wider connections. "Facebook represents a means for individuals to continue (and extend) their offline relationships and conversations in an online medium" [4].

Arnaboldi et al. [5] similarly affirms that the properties of offline social networks are true for Facebook as well. Facebook users primarily communicate with people who are already part of their extended social network [7]. As in offline contexts, Facebook users are closely connected to a smaller group of people and loosely connected to a larger group of people; however, it is acknowledged that Facebook makes it possible to connect or be 'friends' with considerably more people, as reflected in the friends list feature. Nonetheless, the number of relationships that an individual can actively sustain, even on Facebook, is approximately the same as in real-life; Dunbar's number sets this at 150 individuals [5].

To date, studies have focussed on developing an understanding of why people make use of Facebook based on differing case studies and potential factors influencing its growth. Most of these studies do not consider the dynamics of the Facebook use. The need for utilising system dynamics in analysing the dynamics of social networks platforms such as Facebook was echoed by Pay et al. [6]. They developed a system dynamics model to understand why students in Iran use Facebook. Similarly, students at Massachusetts Institute of Technology (MIT) were given an assignment to develop causal loop diagrams of the main factors influencing exponential growth in Facebook use.[1] Limited studies have, however, explored the tension between the growing use of Facebook and the quality of interpersonal communication. This paper thus employed system dynamics modelling in an attempt develop a dynamic hypothesis of the relationship between the use of Facebook and its impact on the quality of interpersonal communication. Given the highly subjective and qualitative nature of this investigation, qualitative system dynamics was deemed most appropriate to provide a richer understanding of the identified problem.

2. The dynamics of Facebook

This section unpacks the motivations for people's use of Facebook, as well as the reasons for the social networking platform's commendable success and continuous proliferation. With technology increasingly shaping and being shaped by our lifestyles, it is imperative to shed light on the fundamental psychological and social drivers for the use of Facebook. Coupled to this is an explanation of the underlying logic of how Facebook works, and how it propagates networks of relationships and connections in a way that bolsters the platform's mission to make the world a more open and connected place.

2.1. Why do people use Facebook?

According to Facebook, people use the site to stay connected with friends and family, to discover what is going on in the world and to share and express what matters to them [1]. Numerous studies have investigated the psychological factors contributing to Facebook use ([7–11]).

Nadkarni and Hofmann [2] reviewed an array of studies and proposed a dual-factor model of Facebook use. In line with this model, Facebook use is primarily motivated by two basic social needs, namely: the need to belong, and the need for self-presentation. Even though humans are highly dependent on the social support of others [2] and Facebook provides a very concrete, accessible and traceable platform through which to foster this, the relationship between Facebook and social connection is complex. Nonetheless, the need to belong - connected to self-worth, self-esteem and so on - is acknowledged as a fundamental driver for the use of Facebook.

The need for self-presentation is a closely connected motivation. Users are invited to create a personal profile through which they establish a presence on Facebook. Comprehensive research has been conducted on the role that social networking sites play in identity construction (e.g. Refs. [12–14]). Like other social networking sites, Facebook "leaves itself open to the possibility its users display their idealised, rather than accurate, selves through their profiles" [2]. Moreover, Facebook "has a number of characteristics (e.g. its ubiquitous nature, high visibility, direct connection to a sizeable and heterogeneous network of known individuals) that provide unique and interesting conditions for investigating the interaction of multiple selves … in self-expression" [4].

Crucial findings by Back et al. [14] and Zhao et al. [15] reveal that, unlike other anonymous online environments, Facebook users express and communicate their real personality rather than promoting idealised versions of themselves. This is because information about a user's reputation or personality is difficult to control (e.g. wall posts posted by other users) and the fact that friends provide accountability and subtle feedback on the self as presented through the Facebook profile [14].

Thus, it can be seen how the reasons underpinning the use of Facebook are intricately connected with complex psychological processes and patterns. Nonetheless, for the purpose of this paper, a simplistic understanding of the two overriding motivations is sufficient.

2.2. Facebook: the strength of weak ties

As has been illustrated, Facebook replicates and extends the vast, varied and interlinking social networks that exist in real life; those constituting the rich social fabric of diverse societies. Similarly, many of the principles underpinning offline social networks are true also for online social networks. One of these principles is the strength of weak ties and the nature of information dissemination ([5,16–18]). Granovetter (1973) seminal text, *The Strength of Weak Ties*, depicts the strategic functionality of weak ties in large scale social networks as small groups aggregate to form large-scale

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[1] http://ocw.mit.edu/courses/sloan-school-of-management/15-871-introduction-to-system-dynamics-fall-2013/assignments/MIT15_871F13_ass2.pdf.