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Do online social networks support decision-making?

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ABSTRACT

The rapid adoption of online social networks (OSN) across different stakeholders raises several interesting questions on different facets of its dynamics. Properly governed and designed OSN can play an important role in supporting different types of decision making (DM), as they provide their participants/stakeholders various forms of support, ranging from the instrumental to the emotional and informational. The synergy of these themes provides an innovative and unique perspective on the actual process of DM within OSN. We use online survey method to address the potential utilization of OSN as a support tool for the DM process. Our results indicate that OSN support and empower users in their decision making process specifically in three key phases that include Intelligence, Design and Choice. Our results also reveal that different types of users (observers, seekers and advisers) have significantly different participation styles, which in turn have an impact on the efficacy of the DM process. We discuss policy implications for OSN designers based on results from this study.

1. Introduction

The history of decision making (DM) research is long, rich and diverse. In terms of quantity, there is no shortage of frameworks, taxonomies, approaches and theories. Decision making is a complex field; it can involve the adoption of various technologies, in addition to the accommodation for different psychological perspectives of individuals. Over the years, the DM process has been extensively studied by researchers. These studies have resulted in several dominant DM perspectives.

Before computer-mediated communication (CMC), people met and communicated with one another via face-to-face interactions. This was achieved by making social connections within different types of networks. A social network (e.g., [28,31]) is a social structure that consists of individuals who are interconnected with one another through common interests, beliefs and/or values. For an excellent introduction to social networks, the interested reader is referred to Wasserman and Faust [29]. From the mid-nineties, social network research has evolved to include online social networks. The idea of building a community based upon a common interest is of great interest within social network research, with online social networks (OSN) as the primary focus. Researchers in this general area are interested in understanding and learning about OSN: How are they used, and how do they affect our societies and businesses? Given their varied nature, OSN are multi-faceted, and researchers have explored various such facets over the past several years. We study DM in OSN.

It is generally acknowledged that DM process comprises several phases (e.g., intelligence, design, choice, implementation, monitoring), and the decision makers themselves have different DM styles (e.g., rational, dependent, intuitive, spontaneous). Moreover, at any given point in time in OSN, a participant decision maker plays a specific role (e.g., adviser, seeker, observer). We study the dynamic among DM phases, DM styles, and decision maker roles in OSN. Specifically, the goals of this study include understanding (1) how OSN are used as a support tool for DM, (2) which DM phases are most used by OSN users for DM, (3) how different stakeholder participation styles influence the support for DM phases through OSN use, and (4) related policy implications for developers of OSN Web sites. To operationalize our study, we use online survey methodology to observe, elicit, and understand the problems and requirements of OSN support for decision-making. Our results have policy implications for both OSN participants and designers.

The rest of the paper is organized as follows: We discuss necessary background and related literature in Section 2. In Section 3, we discuss our online survey as well as develop hypotheses that we then test using survey results. We conclude the paper with a brief discussion on the contributions as well as limitations of this study in Section 4.

2. Background and related literature

Decision-making is a theoretical and practical concept that is affected by cognitive insights of the decision maker. The process through which people make decisions ranges from structured to the anarchical. We now discuss decision making and its phases as well as decision-making styles. We then follow this with a brief discussion on decision-making as it relates to online social networks (OSN).

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2.1. Decision-making (DM)

Extant literature in this area includes a vast selection of decision-making models, frameworks and theories that work towards evaluation of the decision-making processes. While clear distinctions exist between different decision-making artifacts, there are two dominant views of decision-making. One view clearly supports rational decision making, where models are sequential, decisions are structured, processes are analytical and solutions are terminated in a definite environment. In the other view, decision making is defined as an anarchical process, where problems are unstructured, decisions are irrational and the environment is uncertain.

Several variants and extensions of Simon's [26] seminal theory of rational decision making have been proposed over the years. Many researchers followed Simon's view and even based further studies on Simon's rationality theory. For example, Mintzberg et al. [19] extended the Simon model by adding additional phases to the initial process; Rowe and Boulgarides [23,24] revised and modified the Simon model by adding an additional decision maker to the DM process. March [18] proposed an anarchical view of the DM process with his theory of ambiguity and bounded rationality. Supporters of this perspective focus on a different set of aspects of decision making and argue that the analytical decision-making approach does not cover most of the aspects of real-life decisions. Cohen et al. [3] view the DM process as a garbage can, where the solution does not have structure and choice, and alternatives can be retrieved at any point of the DM process.

Simon's [26] model is the most recognizable and acceptable among existing decision-making models, so much so that it serves as the foundation for decision-making research. Simon [26] suggested that the decision-making process can be structured and ordered in three phases: intelligence, design, choice. Intelligence is where the decision maker collects information about the problem, and identifies its cause(s). The second phase is recognition and understanding of possible alternatives and consequences of the future decision. In the last phase – choice – identified alternatives are narrowed down to the best utility option that leads to a decision maker's choice. Table 1 summarizes the taxonomy of the three phases of DM process.

Later, Huber and McDaniel [14] extended this model by adding two other phases: implementation and monitoring. Implementation is when the decision is put into effect, and monitoring comprises the post-analysis activities that evaluate the implementation of that decision; feedback and possible adjustments are also used in the development of direction for future DM situations.

2.2. Decision-making style

Decision-making style provides an understanding of decision-maker behavior that is taken for granted and unconsciously applied to decision making [32]. To understand the decision maker's different styles it is important for the development of a decision model that can deal with individual behavior. Driver et al. [6] argue that the main difference among DM styles occurs during information processing where the alternatives are identified. An influence on selection among alternative courses of action is recognized to be dependent on the decision maker's cognitive make-up [12].

Table 1
Common operations in decision-making process.
Adapted from: Malczewski [16].

Intelligence	Design	Choice
–Involves searching or scanning the environment for conditions calling for decisions	–Involves inventing, developing, and analyzing a set of possible decision alternatives for the problem identified in the intelligence phase	–Involves selecting a particular decision alternative from those available

Most published empirical research in this area has focused on aspects of the decision maker's mental abilities such as experience, knowledge, cognitive processes or factors that can influence the decision outcome. Chermack and Nimon [2] posit that measuring or developing the specific indicators for decision-maker performance is extremely difficult, but that it is essential to have an instrument that can study the pattern of decision-making performance. One of these instruments was developed by Scott and Bruce [25] to measure the DM style of an individual. DM style has been defined as "a habitual pattern individuals use in decision-making" (Driver, 1979, as cited in [25, p. 818]). Five decision styles were identified, and are defined in behavioral terms: (1) rational DM style is characterized by a thorough search for, and logical evaluation of, alternatives, (2) intuitive DM style is characterized by a search for advice and direction from others, (3) avoidant DM style is characterized by individuals who attempt to avoid the decision-making process entirely [8], (4) spontaneous decision makers have a tendency to implement decisions immediately, and (5) dependent are individuals who constantly search for advice and depend on direction from others [8]. The resulting instrument has been named the General Decision-Making Style (GDMS) ([25, p. 820]).

The GDMS is designed to measure the participant's decision-making tendencies towards the decision process. Even in the original model, Scott and Bruce [25] differentiate decision makers according to their style; later, after testing the model, they came to the conclusion that a decision maker can rely on more than one style, but that is unlikely in the case of opposing styles such as rational and spontaneous. Driver et al. [6] agree with Scott and Bruce and conclude that the decision maker has a primary and a secondary decision-making style.

2.3. Online social networks (OSN)

OSN have evolved from general friendship sites (i.e. Orkut, Facebook, Friendster, MySpace, and Classmates) to more specific user-orientated sites. OSN have grown from a small niche group of youngsters to a significant fraction of Internet users who generate the highest user engagement rate [15]. While some of the OSN focus on growing globally (e.g., Facebook, Youtube, Google Plus), others explicitly seek a specific audience [1]. Examples of specific audience sites include Christianity.com and MyChurch.com, with these sites or similar ones targeting a particular demographic of participants. Others deliberately restrict access to selective individuals; an example is aSmallWorld.com which is said to be a network for elite only, where membership is strictly through invitation.

There are dozens of OSN sites, each offering something unique to its members. There are plenty of groups and classifications for distinguishing the online social communities. The main criteria for classification are taken from human interaction with each other in an offline environment.

2.3.1. Decision-making process in online social networks

To understand how OSN can support the DM process, we go back to the origin of the decision-making theory, specifically to Simon's [26] DM-process. OSN are capable of many things that can positively and negatively influence the decision makers. The main question is how OSN can attenuate or amplify the decision-making process. OSN are information portals, and consequently they influence human information processing, where cognitive biases introduce barriers to adequate decisions.

People use OSN to support various phases of the DM process that fulfill the requirements to make a decision in a specific domain. OSN can attenuate or amplify the strengths and weaknesses of human information biases related to DM. This in turn can improve or disregard the decision-making process.

The Internet and online communications are appealing to organizations not only as a low cost way of reaching an audience, but also for the individual thoughts, opinions and histories that are accessed through the global community of Internet users. There are an immeasurable