

The Usage of Social Networks in Educational Context

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Abstract—Possible advantages of technology in educational context required the defining boundaries of formal and informal learning. Increasing opportunity to ubiquitous learning by technological support has revealed a question of how to discover the potential of individuals in the spontaneous environments such as social networks. This seems to be related with the question of what purposes in social networks have been used? Social networks provide various advantages in educational context as collaboration, knowledge sharing, common interests, active participation and reflective thinking. As a consequence of these, the purpose of this study is composed of proposing a new model that could determine factors which effect adoption of social network applications for usage in educational context. While developing a model proposal, the existing adoption and diffusion models have been reviewed and they are thought to be suitable on handling an original perspective instead of using completely other diffusion or acceptance models because of different natures of education from other organizations. In the proposed model; social factors, perceived ease of use, perceived usefulness and innovativeness are determined four direct constructs that effect adoption process. Facilitating conditions, image, subjective norms and community identity are incorporated to model as antecedents of these direct four constructs.

Keywords—Adoption of innovation, educational context, social networks.

I. INTRODUCTION

SOcial networks also known as collaborative social software, are applications that support engaging in a common space around shared interests, needs and common goals for collaboration, knowledge sharing, interaction and communication [1-3]. With these features, social networks support both the virtual and real social worlds, as they entail both online and offline interactions and visual/verbal connectivity. From this viewpoint, it is suggested that, social networks provide an opportunity to choose the best fit tool for interaction [4-7], as a solution to the limitations of social communication tools and personal profile tools, most of which are related with learning management systems (LMS) [6]. In addition, social networks on the one hand affect interaction positively between students-teacher and students-students by

creating more cordial environments.[8] On the other hand they include web-based multimedia and distribution tools incorporating rich audio (podcasting, *Skype*), photo (*Flickr*) and video (vodcasting, *YouTube*, *Stickam*) capabilities and provide engaging two-way experiences for users, while empowering them as “prosumers” of the multimedia content[6].

In these social and digital environments, with high connectivity and ubiquitous, demand-driven learning, it is assumed that there is a need to expand our vision of pedagogy so that learners are active participants or co-producers rather than passive consumers of content, and so that learning is a participatory, social process supporting personal life goals and needs[6]. In this context it is necessary to redefine the boundaries of formal and informal learning. Informal learning differs from formal learning by being unplanned and spontaneous where information is being acquired in an implicit way. It can be asserted that beyond formal learning spaces, there is more necessity for informal learning which provides information sources open for the participation of everyone and to learners’ direct self-control. According to this perspective, the aim is to retrieve and evaluate the potentialities embedded in spontaneous contexts – in this case the network – the emerging domain of study of informal e-learning is receiving greater attention because of the widespread utilization of social networking practices and technologies[9].

Shortly, along with the increasing opportunity to ubiquitous learning by technological support, has revealed the question how to discover the potential of individuals in the spontaneous environments as in social networks. This question also seems to be related with the question of by which purposes these social networks have been used.

While social networks have been adopted and being used extensively by many people, it is notable that they are not adopted in the educational field as much in other fields, despite providing various advantages for the educational context as in personalization, collaboration, information sharing, common interest, active participation, and working together.

There have been many models and theories about diffusion, adoption and acceptance of innovation. While some of these are based on socio- physiological contexts and investigated adoption of innovation at the individual level focused on internal decision processes, [10-12]on the other hand others focused on features of innovation and its examined spread

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among users in a system [13, 14]. In the following section, some of the main theories are summarized.

Diffusion of Innovation Theory (DIT): This theory analyzed diffusion of an innovation with communication processes in social systems by including factors that influence individuals' perception about innovation. Rogers [13] defined diffusion as "in which an innovation is communicated through certain channels over time among members of a social system". The theory is based on four main elements; innovation, communication channels, time and social system.

Rogers [13] defined innovation as an idea, practice or object that is perceived as new by an individual or other unit of adoption. He stated that the rate of adoption is different for each innovation and explained these differences with perception of individuals about perceived attributes of innovation (relative advantage, compatibility, complexity, trialability and observability). Suggesting that adoption of an innovation occurs by communication channels in a certain social system and also expressing that mass media is relatively more influential in the knowledge stage while interpersonal channels are more influential in the persuasion stage.

He explained that time is involved in diffusion at three points;

- 1) innovation decision process -knowledge, persuasion, decision, implementation and confirmation-
- 2) innovativeness of an individual -innovators, early adopters, early majority, late majority and laggards-
- 3) an innovator's rate of adoption in a system.

He also noted that characteristics of social systems as structures of social systems, social norms, opinion leaders and change agents and types of innovation decisions (optional, collective, authority), can facilitate or impede diffusion of innovations.

Theory of Reasoned Action (TRA) and Theory of Planned Behavior (TPB): TRA and TPB are two theories that were based on the socio-physiological field. Both of these theories examined the adoption process by predicting the intention as the basic construct. TRA proposes that intention solely and directly influences the adoption behavior and that intention is determined by two factors: attitude towards behavior and subjective norm[10].

TPB, being an extension of TRA, includes a third determinant of intention, perceived behavioral control, that departs from TRA. TPB supposed that not all behavior may be under an individual's volitional control, so behavioral control as an important factor could be influential on behaviors[11].

Technology Acceptance Model I and II (TAM and TAM II): Technology Acceptance Model was basically adopted from TRA by Davis [12] to predict adoption and usage of technology in information systems and organizational contexts. TAM supposed that perceived ease of use and usefulness are major factors that influence rejection or acceptance of a technology. TAM suggested that people tend to use or not to use an application to the extent they believe it will help them perform their job better which refers to perceived usefulness and secondly, if potential users believe that using a given application is free of effort that refers to ease of use.

In the technology acceptance model, perceived usefulness was found the most important factor that determined intention and, because even a user can believe that a given application is useful, at the same time, they may believe that the technology is too hard to use and the performance benefits of usage are outweighed by the effort of using it. So, perceived ease of use is also theorized as influencing usefulness [12].

Venkatesh and Davis [15] aimed to determine the antecedents of external factors that effect perceived usefulness which has been seen the most important determinant of intention. They divided factors into two groups, which effect perceived usefulness, as social influence processes and cognitive instrumental processes.

In the new model of subjective norm, voluntariness and imagination are determined as factors that predict social influence and job relevance, output quality, result demonstrability and perceived ease of use are determined as factors that predict cognitive processes. It is reported that, both *voluntariness* (mandatory usage) and *experience* (during early stages) have a moderating effect in TAM 2 model [15].

Unified Theory of Acceptance and Use of Technology Model (UTAUT): Venkatesh et al. [16] compared eight prominent models (Diffusion of Innovation, Theory of Reasoned Action, Theory of Planned Action, Technology Acceptance Model, Combined TAM and TPB, Motivational Model, Social Cognitive Theory, Model of PC Utilization) and their extensions to assess similarities and differences across all models and empirically validated an unified model by formulating this model that integrates construct across all the eight models. After reviewing all the constructs in eight models, 7 constructs (effort expectancy, performance expectancy, social influence, facilitating conditions, attitude, self efficacy and anxiety) were found significant direct determinants of intention or usage in one or more of the individual models. While formulating UTAUT, they theorized that only four of these constructs (performance expectancy, effort expectancy, social influence and facilitating conditions) will play significant role as direct determinants of user acceptance and usage behavior, nevertheless the other 3 constructs (attitude toward using technology, self efficacy, and anxiety) were not found significant in that model. In addition to these direct constructs, age, gender, experience and voluntariness of use were determined as significant moderators that are thought to be influential on main effects. Eventually, after the experimental studies, UTAUT was found to being able to account for 70 percent of the variance in usage intention—a substantial improvement over any of the original eight models and their extensions.

II. A PROPOSAL MODEL FOR SOCIAL NETWORK'S USAGE IN EDUCATIONAL CONTEXT

In this study, while developing a model proposal, the existing adoption and diffusion models have been reviewed and they are thought to be suitable in handling an original perspective instead of using completely other diffusion or acceptance models because of versatile subjects, the different nature of education from other organizations and assumption of all of innovations' adoption, acceptance and diffusion must

be dealt within its own context. Consequently, after examining the other theories' constructs, social factors, perceived ease of use, perceived usefulness and innovativeness are determined four direct constructs that effect the adoption process. Facilitating conditions, image, subjective norms and community identity are incorporated to model as antecedents of these direct four constructs. The constructs that are included in the model, are defined in the following section.

A. Direct Constructs

Social Factors: It is defined as the individual's internalization of the reference groups' subjective culture, and specific interpersonal agreements that the individual has made with others, in specific social situations [17].

Perceived Ease of Use: It is defined as "the degree to which a person believes that using a particular system would be free of effort"[12].

Perceived Usefulness: Perceived usefulness is the "the degree to which a person believes that using a particular system would enhance his or her job performance" [12].

Innovativeness: According to Rogers, innovativeness is adoption of an innovation earlier than other individuals in that system. Rogers[13] categorized adopters according to their adoption time as innovators, early adopters, early majority, late majority and laggards. Agarwal and Prasad [18] defined innovativeness as "the willingness of an individual to try out any new information technology" to explain why some people adopt an innovation while some others reject to use.

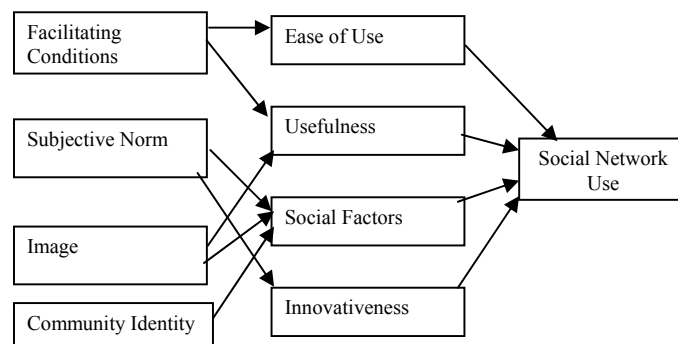
B. Determinant Construct

Facilitating conditions: Facilitating conditions are objective factors in the environment that observers agree to make an act easy to accomplish. Provision of support for users in the case of need or in the case of difficulties [17].

Image: Image is defined as individual's, organization's, group's etc. general impression of others or strained perception corresponding individuals' real character, ego [19]. The context of adoption of innovation is defined as "the degree to which use of an innovation is perceived to enhance one's image or status in one's social system"[14].

Subjective Norm: Subjective norm is the perceived social pressure to engage or not to engage in a behavior [10].

Community Identity: Sense of community is defined as "a feeling that members have of belonging, a feeling that members matter to one another and to the group, and a shared faith that members' needs will be met through their commitment to be together"[20]. On the other hand, community identity which is seen as one of the important determinant of individual's motivation to participate in virtual communities, is defined as "individual's identification with the group in the sense that the person comes to view himself or herself as a member of the community, as "belonging" to it"[21]. Especially in social networks, because community identification is more dominant than individual identification, where in this study, community identity is handled as "tendency of individuals, identifying a community identity by their common interests and needs in social network environments".



A proposed model for usage of social networks in educational context

Examining social networks diffusion in the educational field requires considering many factors as educational and in social context, internet environment and individual characteristics. Because that education is a social activity that includes many individual in the process, it is suggested that social norms and individuals' own characteristics are very important to participate into these environments[22]. Therefore, in this study social factors are regarded as the direct construct to affect usage (H1). On the other hand, social factors includes many factors related with individuals and their social environments as in relationships with others, status in a system, feeling of belonging a community, constituting communities with common interests and expectations. Because social networks provide opportunity to constitute an identity in virtual environment along with constituting a community identity with individuals that have common interests, needs and expectations, this study considers community identity as an antecedent construct that determines social factors (H1a). In addition, because participating in these environments, by publishing profile information, sharing, comments and other activities provide image acquisition, this study includes image as in social factors (H1b). Along with these, because other people, namely social norms are influential in participating to social networks[23], subjective norms are defined as perceived social pressure and are included as social factors (H1c).

Social network environments require technical skills as computer literacy and internet usage. Therefore students face kinds of different functions as knowledge sharing, uploading or downloading files, communication, adding pictures, menu usage. So, perceived ease of use which is defined as using a particular system free of effort, directly effects social networks usage (H2). Students' ease of use perception is affected by support from friends, teachers, the help menu or other support services to solve problems when they face difficulties. For this reason, in this study facilitating condition is considered a factor effecting ease of use perception (H2a).

As because students can share their homework, documents and information in a very short time, access universal resources, communicate effectively and quickly in social networks, usefulness perception in these environments are considered to effect direct usage (H3). In addition, besides performance and efficiency obtained in these environments, gaining image and benefiting from facilitating conditions

supposed to be factors, positively effecting usefulness perception (H3a, H3b).

Innovativeness which is defined as taking risk to try an innovation Agarwal and Prasad[18], supposed this to be direct determinant of usage because of its influence on decision of trying and starting to use an innovation by students who are used especially in face to face communication and interaction (H4). On the other hand, because people are important as authoritarian for individuals, taking the risk and trying an innovation [24, 25], are subjective norms assumed to be influential directly on innovativeness (H4a).

C. Hypothesis

H1: Social factors will have a positive influence on social network usage.

H1a: Community identity will effect positively social factors in social network environments.

H1b: Image acquisition will positively effect social factors in social network environments.

H1c: Subjective norms will positively effect social factors in social network environments.

H2: Ease of use perception will have a positive influence on social network usage.

H2a: Facilitating conditions will positively effect ease of use perception in social network environments.

H3: Usefulness perception about environment will have a positive influence on social network usage.

H3a: Facilitating conditions will positively effect usefulness perception in social network environments.

H3b: Image acquisition will positively effect usefulness perception in social network environments.

H4: Innovativeness will have a positive influence on social network usage.

H4a: Subjective norms will positively effect innovativeness in social network environments

III. CONCLUSION

As rapid technological development and innovations progress continually, along with this, students' needs and expectations also undergo a change. Now, education styles have become important in providing students to participate actively, communicate in a flexible environment, share information universally, personalize education and environment for their self and learn independently aside from place and time. In accordance with these expectations, it is supposed that effectiveness will be increased when social networks, one of the emerging technologies, start to be used actively and reasonably in the educational field.

In this study, a proposal model is developed which aimed to determine the possible factors that effect social network usage in the educational context by the students' adoption of these technologies. While developing the proposal model for examining the usage of social networks, instead of adapting one of the diffusion, acceptance and adoption theories or models, a holistic view is preferred for the study. There are two reasons for this. First, diffusion, acceptance or adoption of an innovation includes dynamic, inter-influential and multi dimensional elements; second it is assumed that all the

innovations must be handled in its own context for realistic evidence. In further researches this model can be tested and its hypothesis could be verified. Researchers can define components that effect adoption of social networks in educational contexts and perception of students about them by analyzing relationships between constructs in the model. This can make a contribution both for the educational field and further researches. However the constructs in this study model are belonged to the previous diffusion and acceptance theories and obtained other study findings. Further researches can examine different potential constructs as student motivation, satisfaction, interaction and social presence.

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