Defining Social Technologies: evaluation of social collaboration tools and technologies

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Abstract: The popularity of social technologies continues to grow in the society. The term 'social technology' is often referred to digital social networks such as Facebook, Twitter, LinkedIn, etc. In order to this a redefinition of this concept based on the original definition is needed. Nowadays the concept of social technologies has several aspects which destabilize the dominant status of technology. It emphasizes social sciences and the humanities as society shapers, reconsiders the strength of social dimension in technological sciences. The aim of this paper is to provide insight into the concept of social technologies, to develop its meaning in information and knowledge society by evaluating social collaboration tools and technologies. **Design/methodology/approach –** The research results have contributed to the knowledge of the concept of social technologies. Based on the analysis of scientific literature and results of empirical research in the Focus group as well as Content analysis, theoretical framework for defining the concept of social technologies was developed. The paper presents effects' relation analysis with particular social collaboration tools and technologies. Each tool and technology was evaluated by all positive/negative effects simultaneously by setting hierarchical impact of the effect on a tool or technology. **Research limitations/implications** – The research is limited in a few aspects. To understand the concept of social technologies more deeply and to develop technological perspectives in social sciences a broader theoretical and empirical research is necessary. In order to generalise the research findings, it is recommended that further research includes different dimensions from the perspective of other fields of science.

Keywords: social technologies, social engineering, social collaboration, social media, millennial generation

1. Introduction

In today's world, when the time cost is substantial and competition is fierce, the importance of new technologies is increasing. Surveys conducted by analysts such as Forrester Research demonstrate that popularity of social technologies continues to grow in the society from politics to personal communication, from production of building materials to state management. The term 'technology' could no longer be understood in its narrow sense as manufacturing processes and equipment necessary for production. Technical definition of social space is a broader concept and can be modified to the next level of technology that can be defined as a social problem in search for and implementation of the decision theory approach (Derksen et al, 2012). The concept of social technologies became established in different fields of science in recent decades. It includes a new research area for interdisciplinary research practitioners as well as major practical application and the potential to make a real impact on social reality.

Social technologies – "the computer code and the services that enable online social interaction – are, essentially, the product of 40 years of technology evolution and the fulfilment of a long-held vision of what computers and digital technology could do" (Chui et all, 2012). In their research authors also state "that the Web's growth in reach and capability, and as a medium for interaction, set the stage for the explosive growth of social technologies". Social technologies unleash creative forces among users and enable new relationships and group dynamics. In the hyperactive world people can feel immediate benefits in connecting with the right peers, getting answers to questions and finding information. The Millennials, also known as the Millennial Generation (Generation Y), are people born between 1980 and 2000 (Alberghini, et al., 2010). They are now entering the workplace and have different habits and communication forms than the older generation. According McKinsy Global Survey "Americans spend approximately 11 hours a day communicating or consuming messages in various ways, including in-person, watching TV, reading, and using e-mail" (Chui et all, 2012). Just as email and instant messaging replaced the phone call, social technologies could have a similar effect in changing communication dynamics (De Gennaro, 2010). "Freed from the limitations of the physical world, people are able to use social technologies to connect across geographies and time zones and multiply their influence beyond the number of people they could otherwise reach" (Bughin et al, 2011).

Koo et al (2011) emphasized, that "even though the term 'social communication technologies' is most commonly used to refer to new social media such as Twitter and Facebook, a redefinition of this concept based on the original definition is needed". Nowadays the concept of social technology has several aspects which destabilize the dominant image of technology. It emphasizes social sciences and the humanities as society shapers, reconsiders the strength of 'soft technologies', and restores focus to human actors. It means that social technology is increasingly salient as an object of study for social sciences: sociality is more and more something that people create technically (Derksen et al, 2012). "The instrumental, techno-scientific approach to social life is not the exclusive province of social scientists any more, it demands all the more attention as an object of study" (Mayer, 2009).

Social collaboration tools and technologies which fall in to category of cloud technology were evaluated in this paper.. This category was emphasized as one of twelve disruptive technologies that will change life, business and the global economy (Manyika et al, 2013).

The purpose of this research paper is to provide insight to the concept of 'social technologies', and to develop the role of social technologies in information and knowledge society by analyzing new needs and application forms of social technologies. The theoretical framework for defining the concept of 'social technologies' was developed based on the analysis of the scientific literature and the results of empirical study in the Focus group and content analysis.

2. Theoretical insights to the concept of social technologies: evaluation of this concept and its possible definition

Technologies recently have become an inseparable part of human life in all dimensions. According D. MacKenzie and J. Wajcman (1999) "technologies feed, clothe, and provide shelter for us; they transport, entertain, and heal us; they provide the bases of wealth and of leisure; they also pollute and kill". Despite of all physical demands, technologies also actively mediate in the communication of people, making it easier, more affordable and accessible. The concept of social technology was born in the light of development of communication and collaboration processes in society in dimensions of business, government and community, as well as in the process of interaction between them. In this chapter the brief overview of the evolution of the concept of social technology will be presented, having in mind its connection with communication and collaboration processes.

Nowadays society in everyday life deals with big number of different collaboration tools and technologies. In general meaning collaboration can be defined as the communication of two or more people, who are interacting in order to reach the common goal. Thus such definition does not reveal the essence of this social phenomenon. In scientific literature can be found the idea, that communication is not a trait possessed by an individual, but rather the consequence of a certain type of interaction; specifically, one that has interdependent functionality (Scott-Phillips et al, 2012). This means, that communication is a process, a certain activity, which is done every second in business, government and society. Also the collaboration must be understood as special process, interaction of interdependent subjects. Modern information technologies have brought into reality the necessity of adaptation to the fast speed of information sharing, creating and distributing among actors, located in different states or even continents. For fulfilment of such high requirements a large scale of various social tools and technologies are proposed to the market.

Collaboration tools and technologies comprise an increasingly important part of the information and communications technology infrastructure in organizations, related to key areas such as knowledge management, process improvement, teamwork, and supply chain management (Weiseth et al, 2006). Thus, in modern word collaboration tools and technologies are disengaged from the frames of organizational infrastructure and became easily accessible and affordable not only for business units, but also for governments and society. Such processes made the usage of the concepts of tool and technology very wide, but in some aspects not clear. According to Wikipedia, tool is any physical item that can be used to achieve a goal, especially if the item is not consumed in the process. The synonyms of the "tool", may be such word as "instrument". The set of tools needed to achieve a goal is "equipment". Thus the technology can be defined as the knowledge of constructing, obtaining and using tools. (Wikipedia, 2013a). Technology in its technical meaning is a whole of production processes, tools, which are necessary to produce certain production, and involves general (the cultivation and adaptation of stocks) and additional (transportation, storage, control and

documentation) manufacture processes (Vaitkevičiūtė, 2000). If we transpose this technological definition in the context of social sciences, we would find out that collaboration technology is a whole of collaboration process, including all collaboration tools and in addition all knowledge of their interaction. This means that the concept of tool is narrower and should be understood as a part of technology, which can consist of number of different tools, which usage is concerted and meaningfully placed into consistent process or the interconnected set of it. Furthermore, the concept of collaboration tools and technologies must be supplemented with support of information technologies in order to reveal the importance and modern value of innovative collaboration. Here, the definition of e-collaboration should be shortly described. The term e-collaboration is increasingly being used in industry to denote collaboration activities supported by some form of information and communication technologies (Weiset et al, 2006). Electronic collaboration (e-collaboration) is collaboration using electronic technologies among different individuals to accomplish a common task. This is a broad definition that encompasses not only computer-mediated collaborative work, but also collaborative work supported by other types of technologies (Kock, 2005). In systematic approach it should be easily noticed, that the integrated concepts of e-collaboration tools and technologies can be changed into one of the most modern definition of social technology, which was first mentioned at the University of Chicago by A. W. Small and Ch. R. Henderson around the end of the 19th century (Wikipedia, 2013b). Henderson (1895) had used the term 'social art' for methods by which improvements to society are and may be introduced; "social scientists are the ones who make predictions and social art is what gives directions". The term 'social technology' has dual meaning (Li and Bernoff, 2011): as a term from its introduction was related to 'social engineering' (Schotter, 1981; Sugden, 1989; North and Wallis, 1994; Nelson and Sampat, 2001; Nelson, 2002; Pelikan, 2003, Leichteris, 2011), and since 21st century it gained another meaning as a 'social software' (Johannessen et al., 2001; Andersen, 2011; Duarte, 2011; Leibetseder, 2011; Bugin et al, 2011; Derksen et al, 2012).

In modern understanding of social technology, it could be applied for various purposes, such as decision making, knowledge sharing, etc. Social technologies can be defined as any technologies used for goals of socium or with any social basis, including social hardware (traditional communication media), social software (computer mediated media), and social media (social networking tools) (Alberghini, et al., 2010). Chui et al (2012) defines social technologies "as digital technologies used by people to interact socially and together to create, enhance, and exchange content". Social technologies distinguish themselves through the following three characteristics (Bugin et al, 2011):

- they "are enabled by information technology";
- they "provide distributed rights to create, add, and/or modify content and communications";
- they "enable distributed access to consume content and communications".

Social technologies include a wide range of various technological instruments that can be used by people, private or public sector organizations, or as an interaction tool between them. They include many of the technologies that are classified as ''social media'', ''Web 3.0'', and ''collaboration tools'' (see Figure 1).

All these types of social technologies can be described in terms of three dimensions (Johannessen et al., 2001):

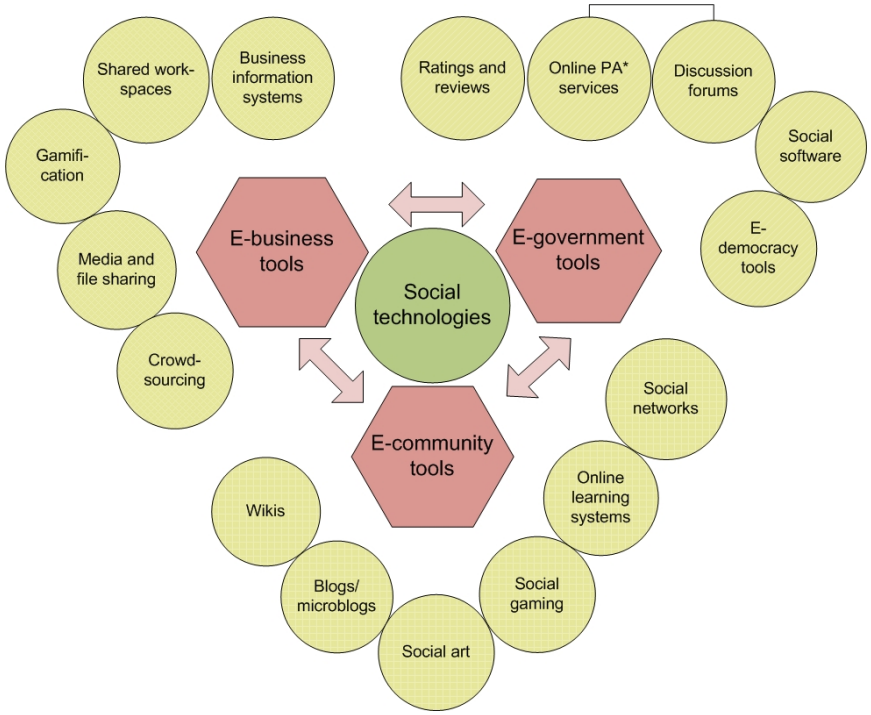
- Richness: "the ability to convey verbal and nonverbal cues, and facilitate shared meaning in a timely manner";
- Interactivity: "the extent to which rapid feedback is allowed";
- Social presence: "the degree to which virtual team members feel close to one another".

Different technologies may be better applicable for conveying data-information-knowledge, while others are better suited for convergence-related tasks such as making decisions. For example, "e-mail facilitates well the fine-tuning and re-examination of messages, but richer synchronous technologies (such as videoconferencing) are needed to resolve differing viewpoints among team members and to develop a consensus for decision making" (Montoya-Weiss et al, 2001).

The definition of social technology is characterized by multiplicity and the concept is not defined unambiguously. The term 'social technology' is defined as a set of potentially arbitrary effective social challenges refillable solution, ways to achieve the intended results, doing social impact of human, social

groups, different social structures' behaviour (Alberghini, et al., 2010; Bugin et al, 2011; Chui et al , 2012). Social technologies are much more than a consumer phenomenon: they connect many organizations internally and increasingly reach outside their borders (Bughin et al, 2013).

According to the Figure 1, all listed social collaboration tools and technologies from the discussion forums to the crowd – sourcing, may be conditionally separated into three big groups: e-business tools, e-government tools and e-community tools. Such separation is only conditional, because every tool, used in certain sphere, has a potentiality to be used in other one. For example: social networks, as a tool for communication, which may be defined as a set of socially relevant network members, connected with one or more relations (Carrington & Scott, 2011), nowadays is widely used in marketing and in involvement of society into decision making processes. Or the crowd-sources, well known also as a collective intelligence, in the course of evolution, from the tool of business units, used for marketing issues, is already transferred to the e-government platform as an instrument for more effective work and decisions. As it visually showed in the Figure 1 different listed tolls are interacting between each other and cooperating depending on the goals, which are set by their users. All mentioned social technologies have some common characteristic: the better accessibility and affordability, granted by the usage of collaboration tools.



Source: Ammended schema first published at Skaržauskiene et al (2013)

Figure 1: Social collaboration tools and technologies

The concept of social technology generally is inseparable from the concept of information and communication technology. Thus this definition, despite of its popularity and wide application may be named as narrow approach of the general category of social technology. Some scientist suggest to disassociate from the informational technologies and reveal the meaning of social technology in wider scope, as all possible problems solving methods, when some negative social phenomena with a help of certain combination of tools and methods, is changed into more desirable in society (Urmonas, 2007; Buračas, 2007). Thus, even this wider attitude (in distance with the compulsory connection with technological progress as a main characteristic of social technology), gives us the same keywords, for defining social technologies: innovative, more effective and changing the common processes.

3. Empirical interdisciplinary approach to analysis of the perception of tools of social technologies

A Focus group method and content analysis were chosen for an empirical research. The research group established the workshop "Defining Social Technologies" during the International conference on Social Technologies at Mykolas Romeris University, Lithuania, in October, 2012 and later on discussions. During the workshop the selection procedure for Focus group representatives was made. The results received in the Focus group were supported with the results of virtual brainstorming using social technologies developed by MRU Faculty of Social Informatics. In the context of interdisciplinary understanding of Social technologies concept mix of Field (natural) and Nominal (also known as Delphi technique) types of Focus groups were used (expert choosing is reasoned in table 1 below). In total, 13 experts from 9 research fields and 10 countries participated in discussions via three sessions. All sessions were organized in the period of 8 month during the year of 2012. Focus group method was chosen for its following features according Kimel (2003): "(a) it provides rich depth of understanding of the phenomenon of interest; (b) it is valid used in isolation from other research methods (might be used to support quantitative research as well); (c) it is as useful and as strong as its link to the underlying research question and the rigor with which it is applied; (d) it provides concentrated amounts of rich data, in participants' own words, on precisely the topic of interest; (e) it provides critical information in development of hypotheses or interpretation of quantitative data". As Social technologies is a phenomenon missing clear definition the Focus group method was chosen as appropriate according to the goals and the object of the research.

According to Grudens-Schuck et al. (2004) composing Focus group with highly different characteristics (such as status, income, education, personal features, etc.) will decrease the quality of the data. Interdisciplinary research requires different characteristics. In order the data not to decrease in quality Focus group members were unfamiliar with each other and kept away from direct contact in sessions 1 and 3. Session 2 was conducted in natural environment with careful monitoring of the process. Anonymity among experts does not lower validity of collected data and is appropriate characteristic for this type of empirical research (Tidikis, 2003). Focus group method has some limitations (challenges) as according to Kimel (2003) they are as follows: (a) small number of participants; (b) limited generalizability, (c) group dynamics can be a challenge, (d) time consuming interpretation, (e) requires experienced analysts. Challenges of the method were overcome with experience of and thorough analysis executed by researchers.

Part of results gathered during this focus group were previously published in 4th international conference on Information systems management and evaluation, RMIT University Vietnam, Ho Chi Ming Sity, Vietnam 13-14 May 2013 (see reference Skaržauskienė et al 2013).

Table 1: Analysis of experts' relevant characteristics

	Main research field	Research work in ST[1] field experience (in years)	Research work experience (total in years)	Country of affiliated research institution
Expert 1	Communication	6	17	The Netherlands
Expert 2	Economics	3	14	Denmark
Expert 3	Economics	5	5	Spain
Expert 4	Education	2	9	Norway
Expert 5	IT[2]	7	21	Portugal
Expert 6	IT	6	11	Finland
Expert 7	IT	6	8	Germany
Expert 8	Law	2	5	Lithuania
Expert 9	Management	3	13	Poland
Expert 10	Management	6	8	United Kingdom
Expert 11	Mathematics	5	19	Lithuania
Expert 12	Politics	2	17	Finland
Expert 13	Sociology	2	8	Lithuania

[1] Social Technologies
[2] Information technologies

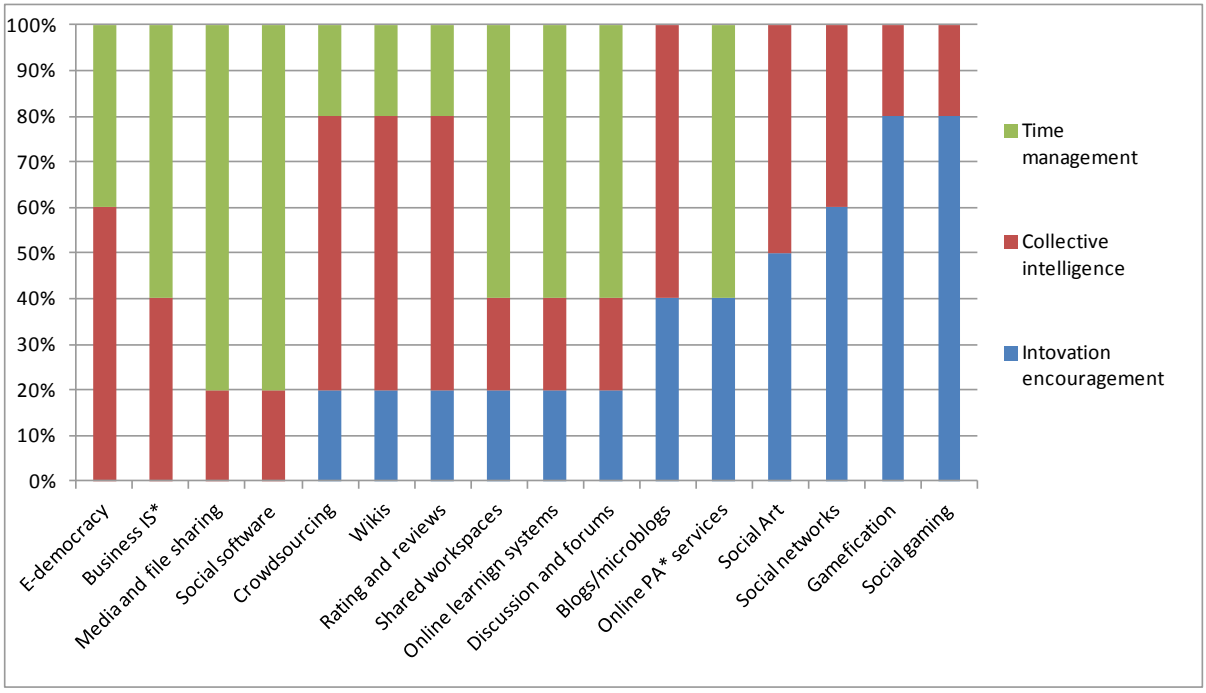
According to Skaržauskienė et al (2013) outcomes of the content analysis revealed that essence of Social technology is seen in 7 different sub-fields (grouped in to major fields) and is close in characterization to the content of concept descriptions found in scientific literature. Focus group data analyses showed that both conceptions of social technologies are still vivid though gradually compiling to one. As social technology with the aspect of social engineering is to be understood as (a) public policy creation means; (b) group behaviour pattern creation methods/means; (c) individual behaviour shaping means; in the social software field of social technology the subfield of social networking tools those two seemingly different aspects are starting to combine. Other sub-fields (collaboration tools, information aggregation tools, knowledge aggregation tools) in social software field are more of a separate sphere more oriented not to changing current structures or forming new ones, but more related to the collective of the community/society.

Social technologies is a possible solutions to a problem when any event a combination of tools and techniques (technology) support is replaced by the more socially desirable. It is practically any activity which is replaced by the object. As a counterbalance to this general concept of social technologies, in research lays another concept, simplifying previously defined from the theoretical approach on the study of innovative technical device. At its most narrow sense social technologies can be understood as information and communication tools that have a range of economic, social, cultural or other public life processes available to each person: computers, smart phones, social networks, etc. Thus, the analysed object is called an instrument through which members of the public relevant information just become available. Both general and as most narrow concept of social technologies gives out the same keywords - social technology is what is innovative, efficient, and changes us past the usual social processes.

Additional notices, relevant to a deeper understanding of the concept of social technologies, were abstracted from the ideas presented in Focus group discussion.

Experts in line with the discussion of the content of social technology concept suggested possible negative or positive effects of this phenomenon. Positive effects were mostly related to social technology as a collaboration or information/knowledge aggregation tool, as in this case it was taken as tool helping to assure efficiency of the processes in collaboration, while negatives rose from social technology as social networking tool with the agenda of personal data privacy or face-to-face communication skills. No strong opinions were given on positive or negative effects of social technology as social engineering. Previous paper (Skaržauskienė et al 2013) presented extraction of positive and negative effects made by social technologies in general. In this paper effects' relation analysis with particular social collaboration tools and technologies were analysed (accordingly in Figure 2 and Figure 3). Each tool and technology was evaluated by all positive effects simultaneously by setting hierarchical impact of the effect on a tool or technology. For example: Shared workspaces were discussed to be as much encouraging innovations as helping to generate collective intelligence and having twice or more times bigger impact on time management; so in the Figure 3 in the Shared work space column 20 percent is given to effects Innovation encouragement and Collective intelligence and 60 percent to Time management effect. The same evaluation was executed with negative effects.

Results of analysis of positive effects of social collaboration tools and technologies are diverse, though some tendencies emerged. Most innovations encouraging and collective intelligence aggregating tools and technologies analyzed belong to e-community group. Time management is mostly emerging in e-business and e-government groups. Most of tools and technologies are evaluated to encompass only two of three effects. E-democracy, business information systems, media and file sharing, social software seem to be weak in innovation encouragement; which may be explained by the essence of tools and technologies mentioned, as they are more related to management of exiting information rather than creation of new. Blogs/microblogs, social networks, gamefication, social gaming seem to be weak in time management, and all of them are high in innovation encouragement. This suggests that time management and innovation encouragement even both are positive effects, but they might be difficult to optimize together. Online public administration services seem to be week in collective intelligence. Again, it might be explained by the essence of this unit, as online services in public administration are being encouraged with the goal to save time for administrative actions, not managerial. Encouragement of innovations may occur by emerging necessity to save more time in routine tasks. If the dichotomy of policy making and implementation is denied, much wider area for innovations might be encouraged via online services in public administration which could include not only issuing of documents, but two way dialog between person and institution..



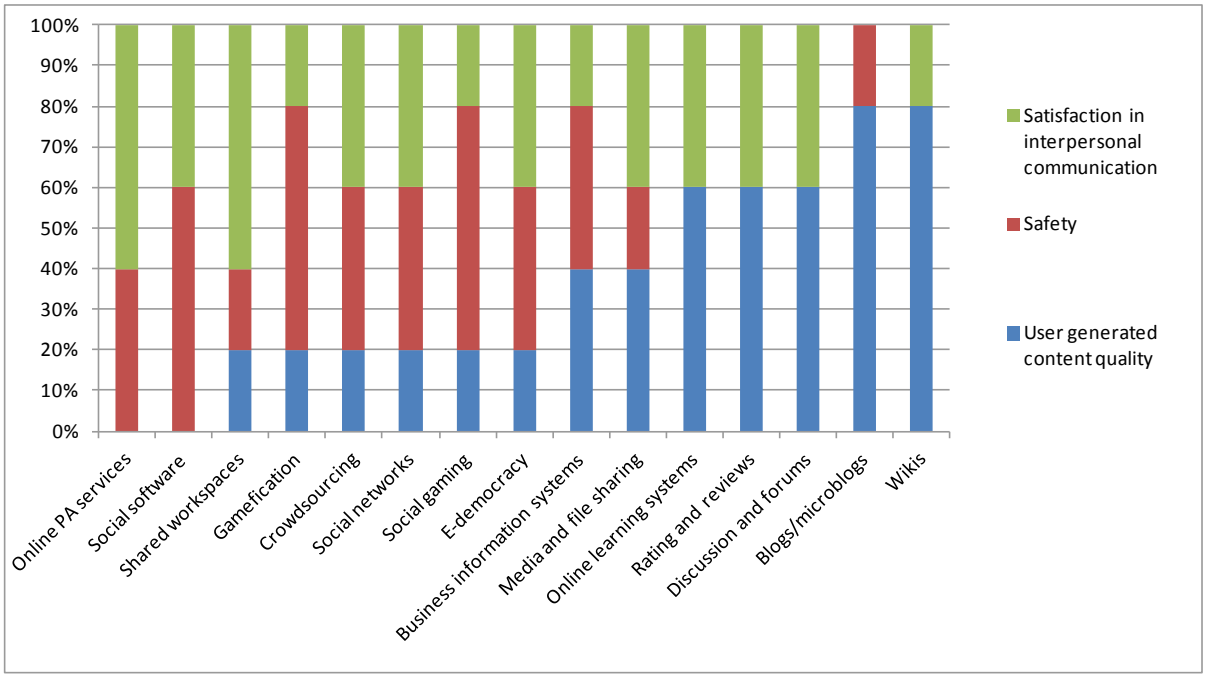
* Business IS – Business Information Systems

* Online PA services – Online public administration services

Figure 2: Positive effects of social collaboration tools and technologies

To sum up: Time management effect is mostly seen in Media and file sharing and Social software; Collective intelligence effect is equally often seen in Crowdsourcing, Blogs/microblogs, Wikis, Rating and reviews, E-democracy; Innovation encouragement effect is mostly seen in Gamefication and Social gaming.

Further in Figure 4 analysis of negative effects of social collaboration tools and technologies is presented.



* Business IS – Business Information Systems

* Online PA services – Online public administration services

Figure 3: Negative effects of social collaboration tools and technologies

Results of analysis of negative effects of social collaboration tools and technologies are les diverse as in positive effects analysis. Most negative effect on user generated content emerges in e-community group. Most negative effect on safety emerges in e-government and e-business groups. Most negative effect on satisfaction in interpersonal communication emerges in e-government group. Similar leverage by all three effects is found on Crowdsourcing, Wikis, and Social gaming; (with exclusion of Safety affect) on Online learning systems, Rating and reviews, and Discussion and forums. Online public administration services and Gamefication seems to be weakly affected by poor user generated content; it might be explained by the essence of those units as accordingly either there is not much user generated content, or that content is not of great official importance.

Social software, Social networks, Crowdsourcing, and Wikis are considered to be least effected by safety issues. Dissatisfaction in interpersonal communication is the least with Blogs/microblogs. Social art tools and technologies did not get to this diagram, as they are not seen as negative effect producers (except matters related to intellectual property protection in unusual environments).

To sum up: Negative effect on User generated content quality is mostly seen in Wikis and Online learning systems; Negative effect on Safety effect is mostly seen in Gamefication, Business information systems and Rating and reviews; Negative effect on Satisfaction in interpersonal communication is mostly seen in Online PA services and Shared workspaces.

4. Conclusions and discussion: The potential and risks of social technologies

Summarizing theoretical insights, results from the Focus group research and content analysis the following conclusion and questions for further research on the potential and risks of social technologies can be formulated:
Despite rapid application of social technologies, much more lies ahead. Today, more than 80 percent of the world`s online population is interacting via social networks on a regular basis, but 65 percent of the world population-4,6 billion people-still lacks internet access (McKinsey research, 2012). The real power of social technologies is only started to be understood. Social interaction via technologies is a powerful way to efficiently organizing knowledge. The same effect is valid to culture, economics, and political power. As has been seen in early use of social technologies, when these ways of interacting are applied to commercial and professional activities (e.g. developing and selling products, working together to solve a business problem), the resulting value creation is impressive (Chui at al, 2012).

The application of social technologies in organisational management has become crucial for success in network society. Nevertheless, over the next few years the emerging “social technologies” of Web 2.0 and Web 0.3 are likely to transform the management. Social technologies enable organisational interactions to take place online with the scale, speed, and economics of the Internet. Virtual networked teams have made management more efficient, because they are reducing the costs of communication, collaboration and coordination. McKinsey’s fifth annual survey on social tools and technologies shows that when integrated into the daily work of employees and adopted on a large scale throughout a new kind of business—the networked enterprise—they can improve operations, financial performance, and market share (Chui at al, 2012).

Social technologies are becoming the preferred method of communication of new generations and communication styles are evolving into a more collaborative approach (Alberghini, et al., 2010). According with Forrester analysts as De Gennaro and Fenwick (2010), there are key trends that will make the inclusion of social technology in society life a necessity. These trends are the physical distance between teams and the entrance of Millennials into the workforce (De Gennaro, 2010). These new employees bring very different needs, experiences, and expectations to the job and often meet a seasoned workforce that has very different work styles (Schooley, 2009). New technologies allow people to raise questions, share knowledge and ideas, and discover people skills regardless of hierarchy

It can be concluded that the current function of social technology is for social purposes via digital means. At its most narrow sense social technologies can be understood as information and communication tools that have a range of economic, social, cultural or other public life processes available to each person: computers, smart phones, social networks, etc. Respondents reported benefits from the use of social technologies for various purposes: first of all reducing communication costs, increased speed to access knowledge, decreasing travel costs, and increased creativity. According empirical research results positive effects were mostly related to social technology as a collaboration or information/knowledge aggregation tool, as in this case it was taken as tool helping to assure efficiency of the processes in collaboration, while negatives rose from social technology

as social networking tool with the agenda of personal data privacy or face-to-face communication skills. Chui et al (2012) and other also researchers from McKinsy Global Institute, working in the field of social technologies identified several risk groups: "employee time spent ''chatting'' about not work-related topics on internal or external social networks or using social media to attack fellow employees or management", different risks related to consumer privacy, information security and data security. These risks could limit the ways in which social technologies can be applied. Also "censorship and restrictions on Internet use stand in the way of value creation by companies that hope to enable consumer to interact with them and that wish to harvest deep insights from social data" (Chui et al, 2012).

Social networking capabilities are providing vital information in a way that is adaptive and user-driven. However, all these technologies have limitations that can easily lead to misinterpretation, as with the lack of non verbal communication, they are not capable of providing the same quality of communication as eye-to-eye interaction. "Because of delays in transmission and the lack of social and nonverbal cues, communication technologies can interfere with open communication, knowledge sharing, and the ability of teams to identify and resolve misunderstandings" (Cohen, Gibson, 2012). Old generations tend to be sceptical about social technologies. Therefore, it is important to implement something useful, to monitor the user engagement and to educate the community for using social technologies (Allberghini et al, 2010). Online collaboration, in its current state, is not a very good substitute for the sort of unscripted, face-to-face interactions that are critical to producing genuine breakthroughs. And complex coordination tasks, like those involved in the design of a new aircraft, still require a dense matrix of "strong ties" among critical contributors, rather than the "weak ties" that are typical of web-based communities (McKinsy Global Survey, 2012).

Social technologies enable more and more users to become a part of global conversation, creating their own content rather than just consuming it. However**,** the quality of user-generated content varies dramatically – from excellent works of journalism to spam and even abuse. Bauerlein (2008) critics have argued that the very disintermediating power of social technologies has reduced the overall quality of discourse. Carr (2010) have argued that the short-form content made me available through social technologies is making people less able to digest large and complex amounts of information. The opposing view is that even our existing means of content selection didn't ever assure quality, that the diversity of opinions is healthy, and that if people can learn social media literacy, access to a broader set of opinions can actually promote critical thinking.

Discussion about social technologies potential ought to be a possibility to address the following question for future research, through fundamental conceptual reflections and empirically-oriented contributions: which social technologies are most important in current social environment? How can we study them? What is the future of social technologies and network society?

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