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## Article

# Towards e-health: Information technologies for increasing entrepreneurship

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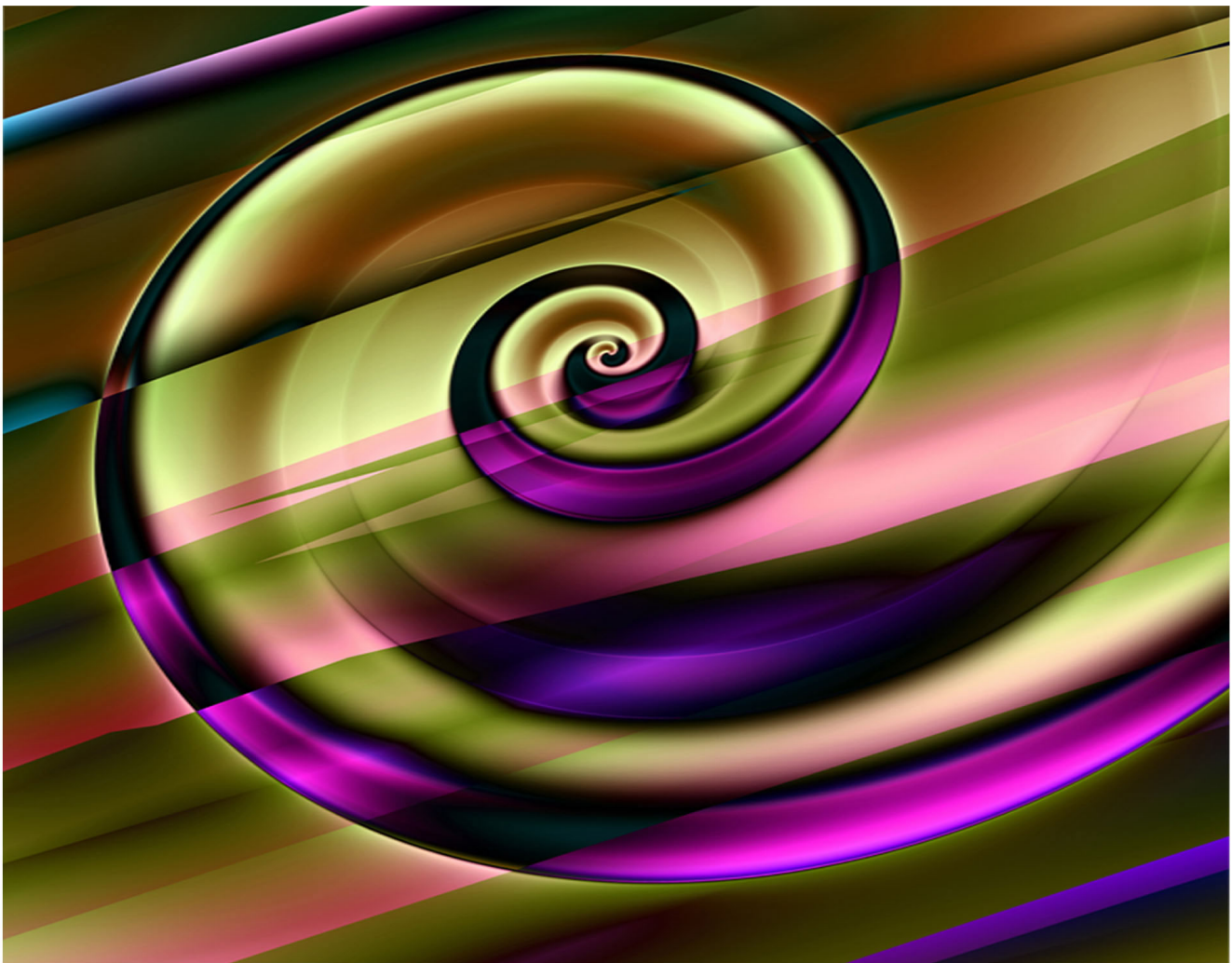
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## **Towards e-health: information technologies for increasing entrepreneurship**

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### **Abstract**

Today's organizations are increasingly finding themselves in a world characterized by globalization, turbulence and complexity, paralleled with an exponential advancement in information technology (IT). These conditions require flexibility, collaboration, innovation and the courage to embrace uncertainty and ambiguity. Such extreme challenges require radical solutions and the transformation of organization development. Improving efficiency and effectiveness in knowledge-intensive society demands sophisticated technologies – learn from and solve problems with other people in organisations using new technologies. Social technologies are powerful tool for holding organizations accountable for their social impact. Information technology has experienced many cycles of innovation, producing always more complex and integrated set of technologies to respond directly to society needs. The paper presents new management practices using social technologies in public administration organizations for addressing higher customer expectations. Drawing on quantitative evidences the paper is seeking to improve our understanding of the role of information technologies and to give guidance on how to handle the relationship between technologies and entrepreneurship in public administration organisations with special attention to health sector.

**Keywords:** e-Health, information technologies, social technologies, knowledge management, innovation, entrepreneurship

### **1. Introduction**

Today organizations are very complex environments. Information technology has experienced many cycles of innovation, producing always more complex and integrated set of technologies to respond directly to society needs (Koplowitz, 2010). Modern organisation requires innovations that increase the efficiency and user satisfaction, paying special attention to developing knowledge sharing and increasing entrepreneurship. Innovative governments are moving away from specialized agencies and discrete services toward more streamlined, citizen-centric processes that focus on optimizing the user experience (McKinsey Center for Government, 2012). Examples include facilities that cater to a wide range of citizen's needs by housing the customer-service divisions of multiple agencies, e-portals that allow citizens to access data and services online instead of at a physical location, and mobile applications. Innovative governments are encouraging citizens to help shape ideas and priorities for electronic public services. In spite of this, "the huge quantity of documents produced daily in public administration organisations can create innumerable silos of information. As a



consequence knowledge capture and sharing can be too difficult and ineffective” (Alberghini et al., 2010). Information technologies could contribute to developing an environment conducive to building and nurturing relationships among organization members and increasing entrepreneurship. Further, managers could facilitate the creation of organizational capabilities using new technologies such as the ability to locate and share knowledge rapidly and respond to changes. Knowledge held by employees and the network of relationships help dynamically to solve problems and create new knowledge. The paper presents new management practices using social technologies in public administration organizations for addressing complexity, uncertainty and changes and fostering entrepreneurship. Drawing quantitative evidences the paper is seeking to improve our understanding of the role of technologies and to give guidance on how to handle the relationship between technologies and entrepreneurship in public administration organisations paying special attention to e-health sector.

## **2. Information Technologies for Increasing Entrepreneurship**

Modern organizations face new challenges: “a growing swarm of unconventional rivals, crumbling entry barriers, a rapid transition from the “knowledge economy” to the “creative economy,” intensifying competition for talent and a profusion of new stakeholder demands” (Divol, et al, 2012). To tackle these challenges, organizations will need to become far more adaptable, innovative, inspiring and accountable than they are right now. This will require a fundamental re-tooling of traditional management practices. Management strategies need to shift from command and control to sense and respond (Rao, 2005). According with Forrester analysts as De Gennaro and Fenwick, 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). The Millennials, also known as the Millennial Generation (Generation Y), they are people born between 1980 and 2000, they are now entering the workplace and have different from old generation habits and communication forms. These new employees bring very different understanding of entrepreneurship, different needs, experiences, and expectations to the job and often meet a seasoned workforce that has very different work styles (Schooley, 2009). Anyway, what Millennials want to support their work, such as flexible work schedules, social media tools, or a collaborative environment are work features that other employees can benefit from, too (Schooley, 2008). New technologies allow people to ask questions, share ideas, and discover people skills regardless of the hierarchy. These tools help to break down organizational and cultural barriers such as time differences (Koplowitz and Owens, 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. This new opportunities enable new forms of entrepreneurship. On social networks, all members are able to contribute content, which is distributed freely and instantaneously, so from leader-centred approach in management we move to distributed leadership, from top-down management to button-up management. Social interaction is a powerful way to efficiently organizing knowledge, culture, and economics and political power. While the typical corporation is based on a centre-to-end architecture, in which decision-making authority is heavily concentrated at the top, the Web is built on an end-to-end architecture, where power is highly distributed (Divol, 2012). Within the new competitive situation, a critical issue facing entrepreneurs, is how to manage an unpredictable and unstable future. “Since the future is basically unpredictable and uncertain, evoking images, rather than established facts, organizations must rely on creative initiatives from the employees to be able to create the desired future”

(Johannessen, 2001). Software developers have continued to develop tools for creating new interactions possibilities (Jue et al, 2009). Gamefication, the use of features of games to enhance online engagement, is another way social technologies can encourage increased collaboration. Therefore, increasing entrepreneurship in knowledge-intensive society demands **sophisticated** technologies – learn from and solve problems, create and build business ideas with other people using new technologies (Cross et al., 2001).

Today's public administration organizations change the focus from the ineffective bureaucratic models to more flexible communities of professional workers such as online communities, virtual self-managing teams, networked organizations *etc.* "Social technologies enable social behaviours to take place online, endowing the interactions with the scale, speed, and disruptive economics of the Internet" (Chui et al, 2012). Over the last decade, the Internet has had a profound impact on entrepreneurship. It has spawned a slew of new management models and has helped make operating models vastly more efficient. Social media/networking and the collection of tools they have spawned have moved solidly into the strategy toolbox for public administration organizations. Many of strategies for increasing entrepreneurship with information technologies by private-sector companies also apply to the public sector. However, because the operating models and mission of public administration organizations are distinct from those of business enterprises we have identified some social technological concepts that are mandatory for every public administration organization today, see Table1 (Zupan, Kase, 2007; Klososky, 2011; Chui et al, 2012; Divol, 2012):

**Exhibit 1:** Social technologies increase entrepreneurship in public administration organizations

Collect information and insights	Gather information
	Building Rivers of Information
	Crowdsource recourses and solutions
	Analyse data
Mobilize structures	Fundraise
	Create and expand volunteer network
	Retain support
Execute mission	Educate the public
	Engage supporters
Organization management	Improve collaboration and communication
	Distribute leadership
	Participate in collective decision making process
	Create self-managing networked teams
	Rapid organizing
Learning and training	Adapt gamefication
	Increase e-learning
	Match talents to roles
Organizational Voice	Conversation with constituents, mindshare
Online Reputation Management (ORM)	Form online reputation, all comments become searchable
Marketing	Use crowdsourcing
	Increase creativity

### 3. Information technologies and e-health

Health sector is public administration area where the “social aspect” of the information technologies is important. Very often information technology has been identified as key, if not the enabler for process change and achievement of multiple organisational objectives (Scholl, 2004). Already a while ago, new information and communication systems have been identified as having powerful potential to improve the functioning of health care organisations too (for instance, Neumann et al., 1996). However, similar to other ICTled organisational process changes becoming notorious for high failure rates, potential of health care IS can only be realised if health care information systems are successfully developed and implemented (Heeks et.al., 1999). Cho et. al (2007) have delivered a review on particular problems that are related to implementation of IT-based innovations within the healthcare sector. Different types of explanations for implementation problems are provided and these are more related to „soft“ rather than „hard“ aspects on ICT implementation, including knowledge barriers and management issues, people and organisational issues, social communication patterns, organisational structure and culture, and enactments of different structures of reference by different stakeholder groups. These topics point to the importance of organisational processes in explaining the success and failure of healthcare IS innovations. Another review study delivered by Butler & Murphy (2007) has researched the success factors of IS implementation. According to the study, the success of information systems (IS) implementation depends on many factors. In order to achieve success, there is a need to consider the organisational context, implementation process and system content aspects. Social and organisational contextual factors include organisational ideologies, organisational complexity, organisational pathology, management support, IS developer assumptions, leadership and commitment and end-user beliefs and expectations. However, there is a common view that after decades of research and practice, organisational change projects involving IT as a major component are still notorious for high costs and high risk of failure (Hirschheim, 1985 in Scholl, 2004). In the public sector however such models are in particular demand due to the sector-specific distribution of powers and the complexity of interaction through checks and balances, which impact almost any project of size (Rainey, Backoff & Levine, 1976 in Scholl, 2004). According to Scholl (2004), a core problem in such IT-related change projects may stem from an overemphasis on both the technical and economic aspects at the expense of other aspects such as the organisational and social impacts, i.e. a technical validity of the IT component supersedes the context-specific social and organisational validity (Newman & Robey, 1992 in Scholl, 2004). A similar conclusion was made by Mustonen-Ollila & Lyytinen (2003) emphasising that IS process innovations should cover not only changes in the technological core of the development activity like the use of new programming languages or operating systems, but also organisational or administrative innovations like new project management methods, participative modes of interactions, or new forms of contracting development work outside the organisation etc. Here then, unlike the predominant technical/functionalist paradigm, evolutionary and organisational change models should emphasize ‘social learning’ and orchestrated organisational change (Hirschheim & Klein, 1989; Lyytinen & Hirschheim, 1987 in Scholl, 2004), where IS designers and researchers would pay a greater attention to the need for designing quality systems that not only meet their primary information delivery objectives, but also take into account the task and organisational design issues that may influence the work environment of users (Joshi & Rai, 2000; Badham, 2001). In April 2004 the European Commission has adopted the e-Health Action Plan and urged the member states of the European Union to develop national e-Health implementation strategies and corresponding action plans to support their delivery. Extensive e-Health infrastructures and systems were soon viewed as central to the future provision of safe, efficient, high quality and citizen-centred healthcare. However, the ambitions plans and

high expectations were soon followed by even larger failures. Most large and complex IT projects (such as in national healthcare informatics programmes) involve considerable delays, are over budget and often reduced in scope. Moreover the experience failures because the systems were not used after actually being deployed within an organisational setting. This simultaneously raises questions about whether the current policy preoccupation with technical specifications, interoperability standards or flexibility in procurement requirements are in fact the most important factors for delivering the “seamless and patient-focused healthcare” identified in typical business cases for major national healthcare informatics programmes.

A more sensible approach towards this process holds that social dimension of information technologies through the inner-organisational user involvement in the process is critical: users need to participate in every aspect of the selection, development, deployment, and use of an IS, and need to co-determine the whole process, since otherwise they would reject and fail the deployed systems (Bravo, 1993; Ehn, 1993 in Scholl, 2004). In this way perspectives on organisational change that started to emphasize human agency, more than technology or structure, to explain empirical outcomes resulting from the use of IT in organisations (Boudreau, 2005) are becoming even more relevant. According to Doolin (2004), whereas early work in the IS’s field has shown that while the introduction of IS in organisations may be articulated in relation to concepts of efficiency and rationality, in practice they function in diverse ways related to the social and political processes that exist in the organisation and in fact IS became ‘mechanisms around which interests are negotiated, counter claims articulated and political processes explicated’. This seems even more relevant in the research of the implementation of national healthcare informatics programmes in Europe and possibly beyond.

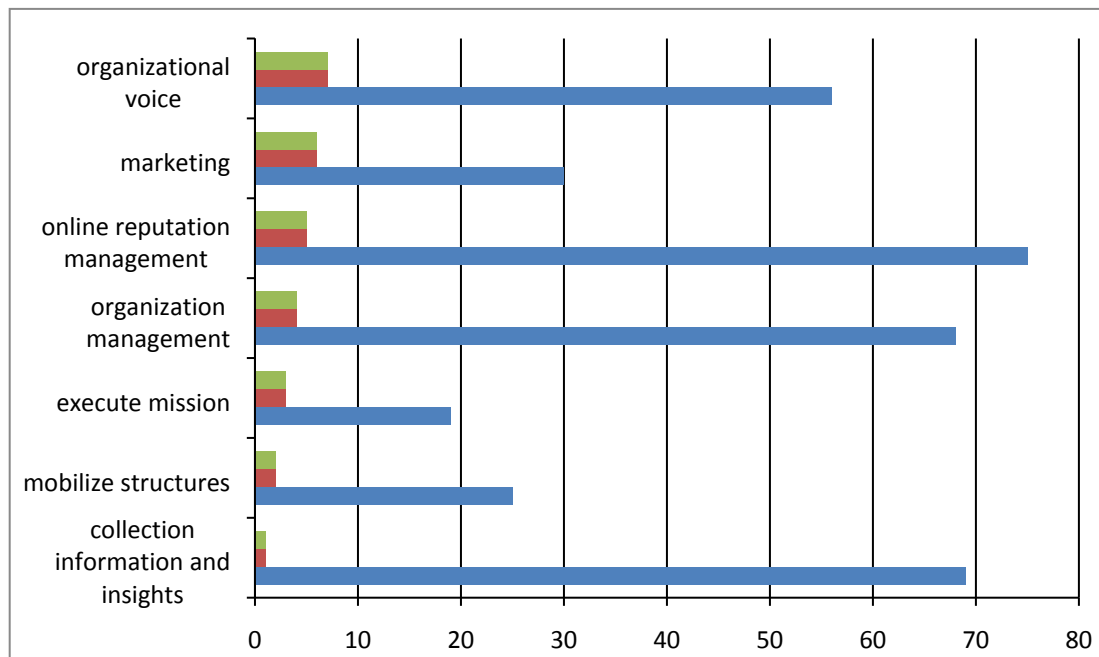
#### **4. Research process/ methodology.**

The paper follows a quantitative research approach. The total sample consists of 80 respondents. The sample was at random selected in Lithuanian Public sector organizations related to health sector. The two stage procedure, recommended by Bartlett, Kotrlik and Chadwick (2001) was employed to determine sample size of every subsample. In this survey mainly public heads of departments and managers were surveyed using web-based questionnaire. The return rate of this survey was 55% and can be treated as a good one.

It’s interesting to note that all participants answered the question “Do you believe that technologies are applicable to all types of organizations, regardless of the field they operate?” positive. 75% of respondents reported using some form of social technology in their organization. Of these more than 60% said they have seen benefits from social technologies. The heaviest users are users in the age from 25 to 35.

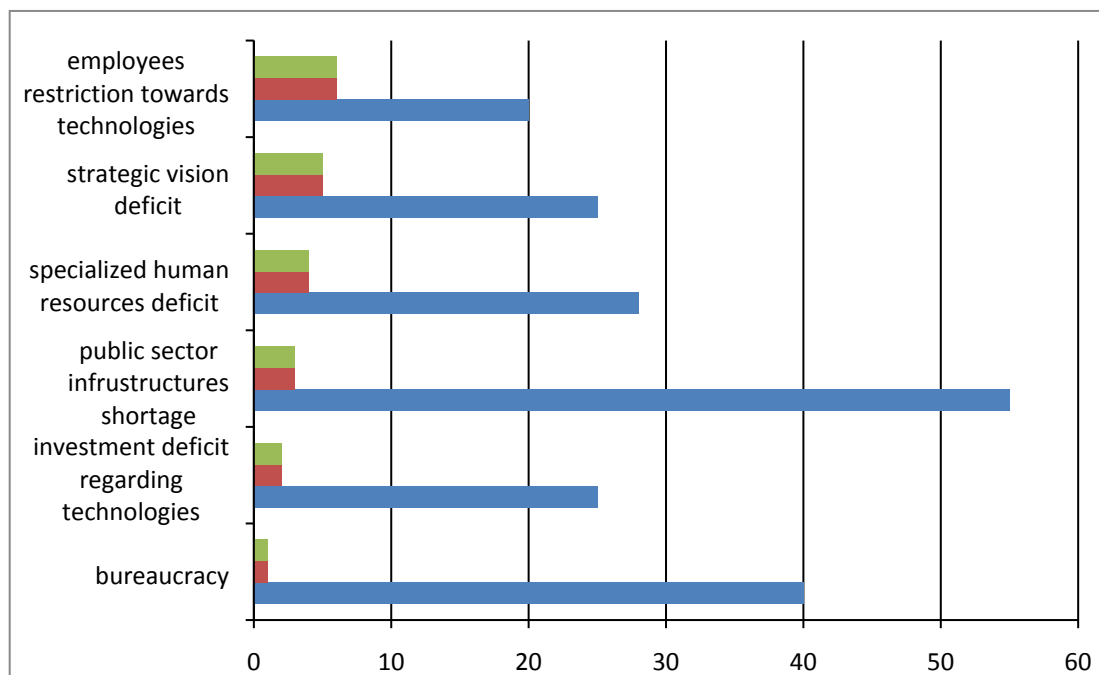
Online reputation management is the most common organization application in public administration organization, while marketing remains the most popular application in business according Chui et al. (2012). More than half respondents say that they use social technologies to strengthen organizational voice (56%) and for collecting information and insights (69%).

#### **Exhibit 1. Information technologies use across functions**



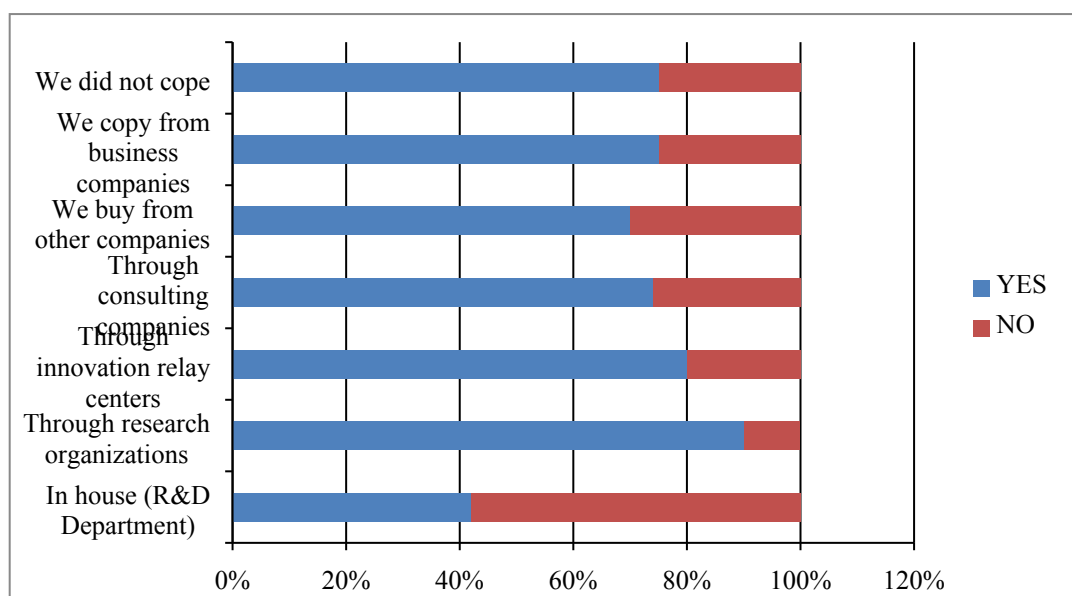
Respondents reported benefits from the use of social technologies for various purposes: first of all reducing communication costs (80%), increased speed to access knowledge (68%), decreasing travel costs (64%), and increasing employee's satisfaction (34%). By analyzing the most important obstacles to organization in order to adapt new technologies respondents mentioned bureaucracy, investment deficit, infrastructure shortage etc. (see Exhibit 2.)

**Exhibit 2.** The most important obstacles in order to adapt new technologies.



75% of respondents answered the question “*How did you cope with technology and innovation in the company until today?*” with the answer “*We did not cope*”. 90% of organisations try to cope with technologies and innovation *through research organisations* (e.g. Universities, Technological – Educational Institutes) and *innovation relay centres* (80%). Only 42% organisations receive support from *in house R&D department*. *Consulting companies* help 74% of organisations to cope with innovations, *business companies* are good example coping with innovation for 75% of respondents.

**Exhibit 3.** How did you cope with technology and innovation in the company until today?



**Limitations.** The references used for this review are not an exhaustive list within the topic area. Relevant sources of information may also exist in other domains of scientific inquiry. Because of the chosen research approach, the research results may lack generalizability. The sample of this research was limited only to national level therefore there is no possibility to compare results across different countries.

## 5. Conclusions.

Business enterprises that have been in applying social tools have reported measurable business benefits (McCinsey, 2012). Our research results show growing interest of public administration organisations in information technologies and that these organisations raise entrepreneurship by interaction of workers and outside partners, citizens and society. Public administration organizations, and especially organizations in health sector, are usually companies with high number of employees and incorporating technological tools can be used to facilitate collaboration and co-creation, reduce the time spent in unnecessary in-person meetings, help share internal knowledge and best practices. 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 increasing employee's satisfaction. Organizations can also use technologies to hire new employees and to integrate contractors or experts into networked teams. From almost any location, employees could initiate projects, form teams, and complete their tasks. Research indicated that the main obstacles to adapt social technologies are bureaucracy, investment deficit, infrastructure shortage for public administration.

Public budgets are shrinking, but citizens, now accustomed to new technologies and constant connectivity, have higher expectations as to the speed and quality of public services. E-health has reached its critical point, because it seems insufficient to move public services into electronically environment only. A more sensible approach towards this process holds that social dimension of information technologies through the inner-organisational user involvement in the process is critical: users need to participate in every aspect of the selection, development, deployment. Further development of e-Health requires better delivery of services to citizens, providing simpler processes and greater convenience, improved interactions with customers, citizen empowerment through access to information, efficient management, increased transparency, new sources of information when shaping policies and services etc.

To achieve the increase in entrepreneurship, the priorities in wider development of information technologies shall be defined and deeper analysis of existing situation related to the main public services provided upon fulfilled. It's clear that the successful introduction of new technologies in e-health sector would depend on many factors, including social and attitudinal factors. The insights designed in this research could be used with further studies to examine e-Health adoption in other countries to sustain the required generalizability of findings.

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