INTERNATIONAL CONFERENCE OF SOCIAL TECHNOLOGIES ‘15

Development of Social Technologies in the Complex World:

Special focus on eHealth

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INTERNATIONAL CONFERENCE SOCIAL TECHNOLOGIES ‘15

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Plenary Session

Moderator:

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THE GROWING IMPACT OF INTANGIBLES ON BIG DATA AND SOCIAL TECHNOLOGIES

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Abstract The data influencing financial, operational and public policy decision-making is increasingly being influenced by new sources of data, much of it intangible, which is to say, not found in generally accepted accounting, mandatory financial reporting or other traditional sources. It is the very innovative and contemporary nature of this information that offers both current and future value. This is especially significant as humanity attempts to understand future trends as well as try to manage them.

Purpose – The purpose of the presentation is to explain the growing use of intangible factors not usually required or found in mandatory financial disclosure in influencing operational, financial and practical application of data to solving contemporary problems.

Design/methodology/approach – Research conducted by the speaker and his associates as well as selected data from other sources.

Findings – An increasing amount of data influencing decision-making about a range of topics from financial management to medical intervention and health care policy is driven by intangible factors whose provenance, comparable value and long term impact have not been codified, but whose importance is growing.

Research limitations/implications – It is difficult to draw long term conclusions from events occurring during times of great change.

Practical implications – Given the disruptive role being played technology, globalization and changing social interactions, it is important to explore, evaluate and interpret many new types of data, not just those from traditional sources.

Originality/Value – To be determined by events and research still unfolding.

Keywords (3-5): intangibles, intellectual capital, data, social impact.

Research type (choose one): viewpoint.
ADDRESSING VALUE SENSITIVE CONCERNS IN THE DESIGN OF SOCIAL TECHNOLOGIES

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Purpose – The notion of values, or “what a person or group of people consider important in life”, is an important consideration in addressing the needs of vulnerable individuals and groups when designing social technologies. Generally, values are most often seen as soft goals or as non-functional requirements. However, there is insufficient attention in treating values as first order concepts in the design process. In this paper we propose that part of the problem of mobile app systems design is that current software practice does not incorporate a theoretical understanding of value as a first class representation in discussions. In particular, the design of mobile apps targeted for social good, where such concerns of values are critical, desperately need guidance. Hence, we argue that successful mobile app design (i.e. For social good) requires an integrated view of value sensitive concerns. Our proposal is based on the outcomes of a research study that developed and deployed a mobile app for use by young people and their caseworkers in youth offending teams in the UK youth justice domain (MAYOT-Mobile Applications for Youth Offending Teams (http://www.mayot.mdx.ac.uk).

Design/methodology/approach – Our methodology employed a range of mixed methods such as surveys, focus groups, and interviews. Importantly, we utilised an innovative co-design approach extended to support value elicitation. Three “research in the wild” case study organizations contributed to the design of the app.

Findings – Our findings indicate the importance of the need to elicit values and their role in technology acceptance. A semi-formal model of values has been produced that enables traceability of a value in stakeholder negotiation. The findings are illustrated through examples derived from the production of the Mayot App.

Research limitations/implications – We have evaluated the app and the resultant challenges in three organizations. Further evaluations are underway and we are developing further theoretical structures that can be used to modify commonly accepted technology acceptance models such as the UTAUT and TAM models.

Practical implications – Technology ecologies can affect the design of social technologies and processes that can support stakeholder negotiation are critical. Values are a critical extension to non-functional requirements in software processes. This research provides further understanding of a relatively ill-defined area.

Originality/Value – The value sensitive model has been part of contributions to several research papers. The app is now being evaluated by a further 12 case study organizations.

Keywords (3-5): Co-design, Value-Sensitive Design, Mobile App, Resilience

Research type (choose one): research paper.
MITIGATING THE DIGITAL DIVIDE FOR DISTANCE LEARNING STUDENTS IN DEVELOPING COUNTRIES

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Purpose – This paper will focus on the limitations distance learning students encounter when they are required to access virtual learning environments (VLEs) from developing countries. Ideally, every student accessing a VLE should share the same experience regardless of their geographical location or broadband connectivity strength. Currently, the main limitation is the ability of information systems to adapt to the users depending on their technological platform, broadband quality and geographical location.

Design/methodology/approach – The aim of this research paper is to work towards optimizing the use of information systems within distance learning to mitigate the current elements of the digital divide. Firstly, we will be introducing the digital divide and its implications on distance learning students. Secondly, we will be considering and criticizing current delivery of VLEs and assessing the current restraints based on broadband standards, geographical location and device compatibility. Finally, based on these findings we will amalgamate all insight gained in order to come up with a viable solution.

Findings – The findings of this paper will present a number of alterations undertaken at both client and server side which can augment the student experience in learning via virtual environments. Research limitations/implications – Based on the proposed findings, the paper presents a solution which can assist in mitigating the digital divide for students undertaking technologically enabled distance learning.

Practical implications – This solution proposed is based on the hurdling of previously identified impediments within literature. Thus, the paper aims at enhancing the student’s virtual learning experience when using online learning platforms.

Originality/Value – The technologies adopted within the paper address the various constraints presented by telecommunication systems within developing countries by customizing the manner in which virtual learning environments are employed. Making further use of novel technologies being adopted for educational aspects, the paper presents a unique solution to lessen the digital divide experienced between students utilizing information systems for learning within dissimilar infrastructures.

Keywords (3-5): virtual learning environment; digital divide; distance learning.

Research type: research paper
Session 1:
SOCIAL TECHNOLOGIES FOR
INTERNET ENABLED FUTURE SOCIETY

Moderator:

Assoc. prof. dr. Gintarė Žemaitaitienė,
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EHEALTH USING INTERNET OF THINGS

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Abstract – One of the most important path in technology development in the last few years is a concept called Internet of things. It can be defined as an "interconnection of highly heterogeneous networked entities and networks following a number of communication patterns such as: human-to-human, human-to-thing, thing-to-thing, or thing-to-things" [1], where things are "physical objects such as sensors or home appliances" [1]. Oxford dictionary defines the Internet of Things as “a proposed development of the Internet in which everyday objects have network connectivity, allowing them to q and receive data.” If we simplify the previous definitions, we could say that Internet of Things is a composition of different electronic gadgets that combined together can achieve specific goals. One of the first and most important application of the Internet of Things concept is in medicine and general health monitoring. Different gadgets, or “things” such as heart rate monitors, blood pressure monitors, activity trainers and applications, blood sugar monitors etc. There are many positive, but also some negative aspects of using Internet of Things “things” in eHealth context and this paper will give an overview of the most common ones.

Purpose – The purpose of this article is to explore the use of Internet of Things “things” in the eHealth domain.

Design/methodology/approach – The use of Internet of Things “things” in the eHealth domain depends on several aspects. Firstly, there are commercial and very complex systems that are provided by specialized medical institutions and that enable monitoring of different health parameters by medical professionals. Those are mainly system that will be used by medical professionals and not a general population. Secondly, there are many “non-professional” systems that are based on applications developed outside of professional medical system, like different activity monitoring applications, and apps that are monitoring and reporting about different health parameters. One of the important requirement for the use of IoT things in eHealth domain is their popularity, since we want to identify the way of application of things that have a larger user base or things that can be critical to their users. Besides that, the use of IoT “things” can have some serious security and privacy implications. Things are popular if they have a large international user base and following. For instance, a smart band worn around an arm could have serious privacy implications if the microphone on it can be used as a listening device. An Internet enabled blood glucose meter can have serious consequences if it can be hacked and made to show a lower or higher reading, misleading the user into leading himself into a diabetic coma.

Findings – This article is a presentation of ongoing project so there are no concrete findings. But, our goals are: to analyse popular IoT things in domain of eHealth for their applicability and for their security vulnerabilities to gain insight into the vulnerability classes in things and contribute to frameworks such as OWASP IoT top 10; and to analyse current systems based on IoT things to gain insight how the current protocols and methods can interoperate to achieve the above explained features.

Research limitations/implications – The research on IoT things in eHealth domain, their security and privacy aspects is always confronted with at least two contradictory requests. From one point of view researcher is trying to get some sensitive information about “things” inside and application, their security problems, and from another point of view, the researched elements or subjects is trying to hide those information because of their sensitivity. The same is applicable in the context of this article as well, so it is hard to get up-to-date and reliable information necessary for research.

Practical implications – To find out if the Internet of Things architectures is applicable in eHealth domain, and if so, how do we solve security problems in this context.

Originality/Value – This article addresses the question of implementation of Internet of Things in eHealth domain. It is a new area and one may consider that every research in this domain presents a new insight into IoT.

Keywords: Internet of Things, IoT, eHealth.

Research type: conceptual paper
MEASURING POTENTIAL OF CI IN ONLINE COMMUNITIES

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Purpose – This paper presents the results of experimental evaluation of online communities by measuring their potential for collective intelligence (CI). The Potential CI Index allows users to identify and to analyse conditions that lead online communities to become more intelligent, inclusive, reflective, and safe. The subject of the research paper are online community projects, which include collective decision-making tools and innovation mechanisms fostering creativity, entrepreneurship, collaboration, new forms of self-regulation, and self-governance. The CI Potential Index (CIPI) shows the state and dynamics of the CI according to changes of various internal and external parameters.

Design/methodology/approach – The data necessary for the identification of the CI Potential Index dimensions were collected using quantitative and qualitative research and revised during the scientific experiment. A longitudinal observation of a number of networked platforms (with special attention to e-Health projects) was undertaken to measure agreed upon representative parameters.

Originality/Value – The CIPI defines capacity of the online community for aggregating and creating knowledge, potential for creativity and decision making, potential for emergence of swarm effect etc.

Keywords: e-Health, Collective Intelligence, Decision Making, Online Communities
Purpose – To examine problems of social innovations in higher education management.

Design/methodology/approach – Document analysis method was applied to examine Lithuanian higher education and its legal regulation, the innovation aspects of the higher education reform in Lithuania, the Lithuanian National Innovation Strategy for 2010–2020. Comparative method was applied to analyze the EU and Lithuanian reform in higher education management. Case study method was applied to analyze internal management innovation in Mykolas Romeris University.

Findings – Higher education takes on an increasingly international dimension, as more and more higher education institutions enroll students from third countries, create the opportunities for the exchange of students, staff, projects and knowledge, as well as get involved in international academic and research cooperation. In rising globalization, Lithuania is being increasingly involved in international networks and experiences influence of supranational powers of education. Lithuanian higher education and its legal regulation are permanently changing; some changes are necessary, systematic and timely, and others are quite chaotic and fragmented. The legal regulation of higher education is being harmonized and correlates with other measures of state regulation such as financing and quality assurance measures (licensing, accreditation, and external evaluation), political formation of strategy and development of the activity. MRU successfully operate in a competitive environment, integrating in the European and global world higher education area, connecting to international networks and mega-networks. MRU distinctive feature is the openness to innovations, the implementation of the most advanced management methods in the world. In the end of 2012, MRU has assessed the ECTS label by the European Commission. This is a high international recognition of the quality of performance with a sign indicating the internationalization of education and good quality control.

Research limitations/implications – This paper analyzes the innovation aspects of the higher education reform in Lithuania.

Practical implications – The global competition to secure mobility of international students is increasing. International cooperation in the field of higher education is important and valuable, and it must be supported at national and the EU level. Such cooperation contributes to the improvement of teaching, learning, and research quality as well as to innovation in the field; in addition, it helps to build knowledge. Recently, many reforms are being implemented in the field of higher education, concerning as financing of higher education, as the management and quality control, as the transformation of state institutions impact. The Lithuanian National Innovation Strategy for 2010–2020 states that the background of Lithuanian economy is the production of high value-added products and services; its competitiveness in the global market to be determined by the innovative business-friendly environment; an interaction of education, science, research, and development with business is to help foster a creative society and a high-level knowledge base for innovation.

Originality/Value – Changing external factors influence universities’ internal management. Universities are becoming more oriented to the public; the social partners and community members are included in the high school’s internal management structures. The implementation of the third task of university’s mission forces universities to create internal structures, interactions, processes that have previously been absent in higher education and the traditional structure of the academic departments, research centers, as well as highly altered, assuming the exercise relevant applied research and adoption of research carried out not only science, but also in industry, business, and other specialists. Inviting business experts to participate in research and teaching processes in order to assist students in gaining experience faster and expand learning strategies becomes normal thing in academic life. In some higher education development guidelines, the European Commission has emphasized the need for students to go to a social contract with the university. The purpose of the article is to introduce some aspects of Mykolas Romeris University’s ongoing management alteration to improve management processes, services (studies) and to increase attractiveness to prospective students.

Keywords (3-5): social innovations, university management, home management, high education attractiveness.

Research type (choose one): research paper.
INFORMATION COMMUNICATION TECHNOLOGIES IN EDUCATION OF OLDER PEOPLE: INNOMEC PROJECT EXPERIENCE

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Purpose – The main purpose of the project introduced is the improvement of the key competences of Elderly Centres’ staff (with or without residential services), as vital bodies of the communities and as “structured educational environments” in order to provide better learning opportunities for individuals and communities. Co-design and testing of new methods of social/educational intervention were implemented in order to: a) improve elderly participation in social and cultural life; b) foster mutual learning with youngest generations and family members; c) reinforce local and European networks and a social responsibility approach, focusing on the contributions of the Elderly Centres to the lifelong learning strategy.

Design/methodology/approach – The introduction of innovative methods and approaches (the audio psycho phonology method based on the principles of Dr. A. Tomatis, the Transcultural Biography Work and the digital interviews) is like a Trojan horse which enables social workers and adult educators in a self-reflective process able to transform their perspectives of meaning and their schemes, improving their professional performances, and increasing the benefits for their clients/users, their organisations and the whole community.

Findings – The ever growing number of older people both in Lithuania and in Europe requires manifold social and economic changes which are necessary in order to secure further development of the country. According to the Statistics Lithuania in 2003 over 20 per cent of the population of Lithuania was 60 years old and older, and, if current demographic trends persist, it is predicted that by 2030 the share of the population that is 60 years old and older will have reached over 27 per cent. Therefore, it is recognized that, with the ageing of society, more attention should be paid to the quality of life for older people, because it is this group of people that will determine the general standard of living and societal stability of the country. One of the crucial challenges among them is implementation of structural reforms in educational system to adapt to ageing societies.

Practical implications – Active ageing is the process of optimizing opportunities for health, participation and security in order to enhance quality of life as people age (Global Age Friendly Cities: A guide, World Health Organisation, 2007). The focus of European Commission Life Long Learning programe project “INNOMEC - Innovative Management and Educational Practices in Elderly Centres” (№539829-LLP-1-2013-1-IT-GRUNDTVIG-GMP http://innomec.mruni.eu) is to support social workers/adult educators with organisational and andragogy methods and updated subsidies in order to reinforce their professional contribution targeted to create and maintain the best conditions for elderly to fulfil their expectations and to express their roles in the community. The partnership consists of several organisations in the position of giving the project experiences, competences and varied perspectives: Speha Fresia and SCV (IT) Inspire (AT) Euro Idea (BE), MRU (LT), Hrafnista (IS).

Keywords (3-5): ICT for education, older people, elderly centers' staff

Research type (choose one): case study.
FEEDBACK ON TEACHER’S PERFORMANCE AS A TOOL EVALUATION OF ACTIVE LEARNING
METHODS APPLICATION
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Purpose is to introduce the analysis of experience of academics and students in adoption of different methods in study process and their performance evaluation. The combination of traditional and ICT based teaching and examination for bachelor and master level communication and management degree students invoke different and sometimes unexpected reaction and challenges in study process. Overview stresses the weakest and strongest aspects as well as presents position of the academics. Discussion is directed toward comprehensive candid evaluation of a teacher’s methods insuring active learning. Therefore, we seek to analyze shifts in teaching methods in relation to students’ assessment how it influenced ‘learning processes’.

Design/methodology/approach. The design of the research is qualitative case study. The study was conducted summarizing a spring semester of 2014–2015 study year experience and results of inquiry proposed for the students at the end of the semester. Inquiry was compose by authors an consisted from open and closed questions. Students were asked to give evaluation of methods applied and an overall judgment of the performance of the teacher (ranging from 1–10, 5 “average” to 10 “excellent”). Students were asked to suggest improvements as well. Totally analyzed 97 inquiries results of five groups of students from two universities.

Findings. Two main groups of findings were made. First of all, the opinion on adopted traditional and ICT based methods analyzed showed preferences of different field different levels students. Therefore, the data shows that students prefer the ability to use novel forms of technology during learning process. It was discovered that mostly they preferred the methods of cinematography and case study (failure stories preferred more than success). And least favorable they were toward the methods with purpose increase active participation in lecture. It is suggested that the students’ attitudes were a product of the extent to which each teaching method made for the achievement of course objectives, and how far it was appropriate to the course content, the examination system and students’ expectations. Secondly, experience and opinion on individual evaluation. Teacher receives detailed feedback about her performance indicating strong and weak aspects. The efficient provision of automatically generated item performance information to teacher allows convenient quality assurance (QA) monitoring, enables modification of teaching to better support student learning. Further research is needed to determine whether this feedback indeed leads to improvement of teacher’s behavior. As well as analysis of interaction between individual and institutional performance evaluation.

Research limitations/implications. The case analysis always has a limitation of suitability for only certain organization or context. The small sample size limits the generalization of results. Analyzing only limited number of student answers gives only suggestions but not recommendations. Secondly, we rely on students’ interpretations of the course evaluation questions, which could vary. Third, we do not consider data on students’ characteristics, or learning outcomes, all of which would be useful for comparing evaluations of teaching methods. Although sharing different experiences helps to improve teaching strategies and methods and learn from others’ mistakes or success.

Practical implications. Critics toward adoption of certain methods let formulate the proposals for criterion to evaluate if the certain methods fit the auditorium. Secondly, traditional vs. ICT based examination evaluated and pluses and minuses summarized to make the key aspects for other academics to decide if this type of examination fits their situation. The study of successes and failures provides a better understanding of ICT based tools/methods vs. traditional methods adoption in higher education and sharing of experience among academics. The authors suggested that this form of feedback is effective because it simulates a development of “self-directing,” “self-monitoring,” and “self-correcting” individual.

Originality/Value. This study developed a computer-aided system for meaningful and customized feedback on the quality of used teaching methods and assessment forms. Value added to the introduction of google tools usage and popularization among academics.

Keywords: feedback on teacher performance, ICT based methods, traditional methods, study process, examination, higher education
Research type: case study
FACTORS INFLUENCING UNIVERSITY STUDENTS’ ACCEPTANCE OF WEB 2.0 TOOLS FOR LEARNING ESP

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Purpose – to determine factors influencing students’ acceptance of Web 2.0 technologies for learning English for specific Purposes;

Design/methodology/approach – the study was conducted using a quantitative approach, a questionnaire and a descriptive methodology of data collection and analysis. The study was based on a theoretical Technology Acceptance Model (TAM), describing individual user acceptance of information systems. Six variables of TAM: awareness, perceived usefulness, perceived ease of use, attitudes towards use, behavioural intention, actual system usage and their relationship with students’ background factors were discussed in the study.

Findings – The investigation resulted in determining that students’ ability to use Web 2.0 tools was the only individual factor that had a positive relationship with their attitude, intention to use, actual system usage and awareness of Web 2.0 tools meant for learning English for Specific Purposes (ESP) at the university; therefore, this should be taken into consideration before integrating Web 2.0 tools into ESP curriculum and/or planning any educational intervention;

Research limitations/implications – small sample size and convenience sampling method employed in the study limited power;

Originality/Value – no previous studies focusing on the use and acceptance of Web 2.0 tools in a foreign language educational setting in Lithuania have been conducted in relation to TAM, therefore this investigation can be considered one of the first in the field.

Keywords (3-5): Web 2.0 tools, Technology Acceptance Model (TAM), foreign language teaching and learning.

Research type (choose one): research paper
THE FUTURE FACTORS THAT DRIVE E-COMMERCE AND CONSUMERS ONLINE SHOPPING DECISION

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Purpose – The purpose of this paper is to look the future factors driving online shopping and develop an understanding of the factors influencing consumers to shop online by exploring the effects of user on the encouraging factors identified through the research project, such as security, delivering, compare price, convenience, cheaper prices, widerange. At the same time, take note of the factors that are discouraging consumers and what factors creating value to shop online. Specifically, research exploring of how can these factors be affected by age, gender or work status.

Design/methodology/approach – A two‐step research process is used. First, exploratory qualitative research is carried out, with the purpose of gaining an in‐depth understanding of future factors driving e. commerce by taking 9 experts interview. Second step, consumers’ online shopping factors driving online shopping have been tested through quantitative survey by analyzing data collected via a Web‐based questionnaire survey. The sample consisted of 183 Lithuania consumers who had purchased online.

Findings – Information gathered from experts’ interview indicates the driving factors for the future of e. commerce including products delivering by drones, representing all goods by video formats (3D), mobile payments, payments security using biometrics data, dynamic pricing, mind reading technology as telepathy, predictability technology of consumers decisions.

The empirical findings of this study indicate that the main factors influencing consumer to shop online such as convenience and simplicity, better price. Analyzing socio - demographics characteristics as gender, there had been found out that men more often are shopping online for less price. Respondents by 25-35 age more often are choosing shopping online for time lack and wide range. Most valuable factor of shopping online was identified as possibility to compare price and buy at lower price. The research findings have noted that discouraged factors to purchase products online can be described as all goods are with reduced/remarked prices, requirement to take personal information (sign up) and inconvenient goods delivering.

Research limitations/implications – This study examined only in general terms and these findings are not necessarily applicable to particular e. commerce store. Future research is highly encouraged to examine consumers’ attitudes towards specialized online shopping websites to look for differences of any kind of products or services.

Practical implications – Attributes identified by this study could help web site developers to shape their marketing strategy, can assist in identifying and overcoming key obstacles to the delivery of a highly convenient online shopping service to customers. Online stores can devote valuable corporate resources to better mapping of the online consumer’s behaviour, new futures technologies and changes.

Originality/Value – This paper would be valuable to online retailers, as it will help them to attract consumers and enable better design of their e‐marketing strategies that cater to consumers’ changing needs, lifestyles and improve their online shopping experiences.

Keywords (3-5): Online shopping, Consumer behaviour, Internet, B2C e-commerce, Online Shopping

Research type: research paper
ON THE IMPACT OF INFORMATION ASYMMETRY ON EVALUATION AND RISK OF CLUSTER PERFORMANCE

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This article aims to determine and analyse the main approaches of evaluation of cluster or group performance under information asymmetry within cluster. It is assumed that one of the most relevant causes of information asymmetry inside the business clusters are the different interests of its stakeholders and their willingness to dominate. This paper contributes to the further analysis, development and generalization of evaluation approach of cluster performance and of the impact of information asymmetry on the activities of business clusters.

Purpose – is to investigate the impact of information asymmetry on the evaluation on performance of business clusters and the methods and approaches of evaluation of performance with regard to information asymmetry.

Design/methodology/approach – general overview of research papers presenting concepts and methodologies of evaluation of performance with regard to information asymmetry.

Findings – information asymmetry has a significant impact on the performance of business clusters, and can be the decisive factor in the viability of a cluster. The members of cluster can be seem as subjects willing to dominate in cluster and to gain a relatively more portion of profit of clusters, some conflicts of interests can appear. However, there is no universal approach for evaluation of the impact of information asymmetry on cluster or group efficiency. This paper aims to highlight the main types of information asymmetry and respective approaches of evaluation analyzed by the researchers.

Research limitations/implications – the complexity and nature of information that can be used in the process of creation of innovation. The strong assumptions on information asymmetry from one side and the lack of advanced investigation focused on the evaluation of business clusters performance efficiency under information asymmetry from other side are the most relevant limitations of research. Therefore, the conclusions are focused only on the conceptual level and analysis of possible further steps in creation of respective methods or models.

Practical implications – information asymmetry has a significant impact on the activities and performance of business clusters, and can be the decisive factor for a viability of a cluster and creation of innovations. This study will contribute to the further development and generalization of evaluation approach of cluster performance and of the impact of information asymmetry on the activities of business clusters.

Originality/Value – This case in terms of business cluster performance and creation of innovations is not exhaustively analysed by other researchers. This paper is one of the first attempts to describe and make an assessment of the evaluation of clusters with financial contagion in the Baltic States. The findings of this article should ground the further steps of the creation of evaluation of performance efficiency under information asymmetry.

Keywords (3-5): information asymmetry, risk management, evaluation.

Research type (choose one): literature review
PRIVACY IN ONLINE SOCIAL NETWORKS AS LEGALLY PROTECTED VALUE

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Purpose – to analyze the privacy as legally protected value phenomena in online social networks.

Design/methodology/approach – in order to achieve the above mentioned purpose, the author introduces the history of the right to privacy, the distinction between privacy and data protection, describes the limits of the right of the protection of privacy, specifically referring to the protection of privacy in online social networks. The author uses the following methods: analysis of the scientific literature, examination of legislation, study of actual court decisions and comparison of US and European approaches to the protection of privacy.

Findings – the main findings of the article include the reflection of a constantly developing conception of privacy, the different continental approaches into the protection of privacy, the inevitable distinction between public and private information and characterization of the fundamental elements of privacy.

Research limitations/implications – the research mainly focuses on the examination of legal values in assessing the protection of privacy in online social networks and does not include any psychological, sociological and ethical aspects of the phenomena.

Practical implications – the research analyses the key elements in defining privacy value, which might be practically used by the legislative bodies, as well as the each consumer and end-user of the online social network.

Originality/Value – the article reveals quit new, currently actual and little researched area in privacy studies – the legally protected key elements of the privacy in online social networks.

Keywords: privacy, online social networks, legislation requirements.

Research type: research paper, viewpoint, literature review.
INTERNET CONNECTIVITY AND THE CLOUD

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Purpose – To critically examine the appropriateness and the influence of internet connectivity on the cloud platform; to demonstrate that internet connectivity do indeed affect and to a greater extent, enhance the efficiency of business operations that use of cloud computing technologies.

Design/methodology/approach – This paper presents the analysis of literature done on the internet connectivity and the cloud within the political, economic, legal, social, external and technological factors. A comparative analysis using UNDP ICT development country report documents, and the UNCTD (conference reports) was done in addition to performing expert interviews and online survey questionnaires.

Findings – Several components within the political, economic, legal, social, external and technological factors must be considered before cloud computing technologies are adopted. Based on the insights gathered from the experts and the findings from questionnaire survey, cloud computing technology has the potential to improve the efficiency of small and medium-sized enterprises. From the expert point of view, the cloud do in fact improves efficiency for SMEs however this efficiency is more tangible only for those enterprises operating in developed economies. The commissioning of cloud-based software and applications related to these key business processes can improve these processes. The extent to which cloud adoption improves these processes are highly dependent on the nature of business operations, the size of the SMEs, markets competition and the extent to which SME users become more that aware they are using cloud computing. The main advantage is that the cloud grants the potential to improve the quality of administration and execution of business processes through the use of web-based technologies and productivity tools available in the cloud. Cloud services should only be adopted based on the business requirements of those SMEs rather than for technology, as obstacles such as internet connectivity will first have to be addressed before the economies of scale associated with the cloud are fully realized by developing economies SMEs.

Research limitations/implications – The vast majority of the data is derived from literature and reports from UN and the findings from developing countries SMEs. The results derived from this analysis should be expanded and compared with independent country reports as well as SMEs in developed economies.

Originality/Value – Provides insights on the impact of internet connectivity on the cloud platform and its influence on SME business efficiency.

Keywords: Information and Communication Technologies (ICT), Internet, Cloud computing, SME efficiency

Research type: Research Paper.
ADOPTION OF ENTERPRISE SOCIAL NETWORKING TOOL: PILOT STUDY RESULTS

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Assoc. Prof. Dr. Gintarė Žemaitaitienė, Mykolas Romeris University, Lithuania, giparaz@mruni.eu

Purpose of this presentation is to introduce first steps in identifying and exploring the process of successful adoption of enterprise social networking tools in organizations. Organizations (both in private and public sectors) face a number of possibilities of using enterprise social networking tools in their working environments. However, in order to bring significant and positive changes, this innovation has to be adopted by all intended users which is not always the case. Even though the decision was already made to implement a certain ICT based tool within an organization, it can still be rejected or discontinued after initial adoption.

Design/methodology/approach. For this study, an organization was chosen where enterprise social networking tool Yammer was available for 9 months before it was decided to discontinue its use due to the low rate of adoption. A case study approach was chosen, using mixed methods research. In preparation to accomplish a full case study in Lithuanian organization, scientific literature was summarized. As a theoretical background, Roger’s Diffusion of Innovation Theory was chosen, with the focus on the adoption decisions. Adoption process was explored using qualitative methods that included the organization’s internal documents analysis, previous inquiries’ results analysis and semi-structured interviews with the three experts inside the organization. The chosen specialists were responsible for innovation related decisions and their implementation. This provided a deeper understanding of the innovation decision process and gave premises to prepare further – quantitative – research instrument, which is not introduced during this presentation.

Findings. The pilot study revealed significant results about the process of enterprise social network tool adoption in organization from the perspective of initiators. The key points for Yammer adoption were its introduction by the top management (contingent innovation-decision), how it was perceived by the employees, individual characteristics of adopters and the nature of the social structure within organization. The results partially corresponded with other studies done in regards to ICT adoption. The discovered differences and tendencies helped to prepare for quantitative research to deepen the knowledge about the processes from other stakeholders’ perspective.

Research limitations/implications – the internal documents / records analyzed and the experts interviewed were from a single organization and only in regards to the implementation / adoption process of one enterprise social network tool (Yammer). Therefore further research can be prepared following the chosen research methodology or adopting it for the needs of concrete situation analysis.

Practical implications. The study of failures provides a better understanding of enterprise social networking service tool adoption process within an organization and how it may lead to a more successful implementation of this type of tools in practice. It also provides the answers for the organization which faced difficulties in adoption of Yammer to avoid repeat of failure with other ICT based tools.

Originality/Value. Firstly, value was added to the ICT adoption process scientific literature since implementation failure cases are addressed less often; secondly, deeper insight was gained into the main elements of successfully adopting enterprise social network within the organization. Also value was added to application of diffusion of innovation theory and a broader context of diffusion of innovation was investigated.

Keywords: adoption, diffusion of innovation, enterprise social networking, Yammer

Research type: case study
FOLLOW UP RESEARCH ON VIRTUAL COMMUNITIES COMMUNICATION IN FACEBOOK

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Purpose of this presentation is to introduce a research plan for follow up research of communication of Lithuania’s virtual communities on Facebook. In the previous study social media was recognized as alternative to main platform communication tool, but not deeper analysed. The purpose of the work is to reveal the content and overall situation of Lithuania’s virtual communities’ communication on Facebook.

Design/methodology/approach – This paper presents the analysis of literature done on communication, social media and virtual communities. Further will be used observation method to explain how Facebook is contributing to the development of collective intelligence through virtual communities. The chosen for observation are the Facebook profiles of Lietuva 2.0, “Transparency international” Lietuvos skyrius, Global Lithuanian leaders, Vilniaus miesto savivaldybe communities.

Findings – the literature analysis revealed that virtual communities will not replace organic communities, but they might be able to strengthen them. The virtual communities no longer are confined by time and space, as the organic ones, but the apparent remoteness creates an overwhelming portion of participants who just watch, read and listen rather than interact themselves. The Online communities are using social networking platform to solve problems, discuss ecological, social and educational problems. People get an opportunity to find like-minded people, express their views, propose new ideas and initiatives, learn about political and social issues. The final results of the observation should disclose if people involved in online communities are socially oriented. To propose suggestions for improvement of communication in Facebook of above mentioned communities is also among objectives of research. The presumption is that these communities are not popular therefor people are not well informed about the Facebook pages and are not actively involved in discussions.

Research limitations/implications - the research is a continuation of the project “Social Technologies and collective intelligence” and can only complement the work that is already done is the aspect of social media research.

Keywords (3-5): virtual communities, communication, Facebook.

Research type (choose one): literature review (and research plan).
BRAND VALUE AS AN INFLUENCE FACTOR OF COMPANY'S ECONOMIC VALUE ADDED

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Abstract

Purpose – The aim of the paper to examine how brand value would influence economic value added (EVA) of the natural mineral water producers in Lithuania. This paper also deals with the examination of brand evaluation bias for small and medium-sized enterprises (SME), which is not listed in Lithuania’s securities market.

Design/methodology/approach – A research methodology composed of two main stages (factor analysis of brand value evaluation and regression analysis of EVA). Factor analysis and multiple regression analysis are used to determine how the factors are formed and what their relative weights are. Firstly, brand evaluation procedure was implemented by assessing brand equity and financial value of brand. Brand equity was identified using factor analysis and refined index of brand equity was provided. Financial value of brand assessed by calculating brand profits using discounted cash flow method. Secondly, brand value and the other factors influence on economic value added was assessed using multivariable linear regression model.

Findings – The analysis of research results has showed that Lithuanian natural mineral water sector is mature market, because the market growth 3% per year and domination of two strong brands whose profitability is steady growing. The brand value of Lithuania natural mineral water sector is very influenced by brand awareness and loyalty and brand financial performance is heavily dependent on growth ability and marketing investments to the brand. It drew the conclusion that sector company’s brand value and profit before interest and taxes (EBIT) has positive influence and capital structure or weighted average cost of capital (WACC) has negative influence on EVA, indicating that these factors had an active influence on EVA. The intangible and tangible assets has poor negative or no influence on EVA. The other factors as size, growth ability and industry’s return on equity should be evaluated further in other researches. The possible reasons were discussed later and some advice was given in order to increase the company’s economic value.

Research limitations/implications – The research focused on Lithuania market and one sector. Because social and economic background of Lithuania is quite differentiates from western countries. The discrepancy of capital markets is also distinct. So, in future studies it would be very useful to compare the research results with foreign countries and within the different industries.

Practical implications – The paper provides the the opportunity to assess the brand value of SME’s and evaluate other factors influencing EVA in process of company growth. According to the study strong positive relationship between the EVA, brand value and EBITA, negative - with the capital structure was observed. This is partly confirmed by foreign scientists on the survey findings. In particular, when assessing the company generated revenues, net profit, brand value dynamics show a positive trend to economic added value of the company. Therefore, some advice can be given in order to increase the company’s economic value added.

Originality/Value – The research paper is the first paper in Lithuania investigating factors influencing EVA with a special focus on brand value. The evaluation model of brand value impact on EVA was created. Additionally, the brand evaluation methodology for SME companies was proposed.

Keywords (3-5): brand value, brand equity and financial value, economic value added, influence factor analysis.

Research type (choose one): research paper.
Session 2:

Contemporary Information Systems

Moderator:

Prof.dr. Dalė Dzemydienė,

Mykolas Romeris University
**ASPECTS OF USING OPEN SOURCE SOFTWARE IN HEALTH CARE**

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**Purpose:** The modern world is increasingly understanding the importance of information and communication technologies (ICT) for the health care. ICT applied to health and healthcare systems have the potential to significantly increase their efficiency, improve quality of life and unlock innovation in health markets. The ICT opens new possibilities for health care providers, their patients, patient’s families and for the whole population. The deployment of ICT also opens new opportunities for health care management. These technologies have great potential not only to improve the diagnosis and treatment of disease, but also to aid people in maintaining and improving their health. ICT, used in the provision of health services, referred to as e-health system, or just e-health. For e-health projects it has allocated huge investments, it has organized the conferences, it has created the new organizations, or, according to e-health tasks, it has reorganized the organizations, it has implemented national and international projects, it has created software products, it has opened the new university study programs.

In summary, the modern world is increasingly understanding the importance of information and communication technologies (ICT) for the health care. ICT applied to health and healthcare systems have the potential to significantly increase their efficiency, improve quality of life and unlock innovation in health markets. The ICT opens new possibilities for health care providers, their patients, patient’s families and for the whole population. The deployment of ICT also opens new opportunities for health care management. These technologies have great potential not only to improve the diagnosis and treatment of disease, but also to aid people in maintaining and improving their health. ICT, used in the provision of health services, referred to as e-health system, or just e-health. For e-health projects it has allocated huge investments, it has organized the conferences, it has created the new organizations, or, according to e-health tasks, it has reorganized the organizations, it has implemented national and international projects, it has created software products, it has opened the new university study programs.

USA, Canada, Australia, Denmark, Austria are the countries, who leading in e-health. Our neighbor Estonia has one of the most progressive e-health systems in Europe.

Some steps in e-health was taken in Lithuania – it has running total electronic registration system for a visit to the doctor “sergu.lt”. Hospital management systems and health care services are implementing in Vilnius, Kaunas and Klaipeda clinical hospitals.

It’s interesting, that in these hospitals are implementing different software products.

E-health systems costs hundreds of millions of euros. And the price does not depends on the amount of people accounted for, but its depend on the functionality and complexity of this systems.

According to a recent PricewaterhouseCoopers Study, 79 percent of health care executives anticipate an increase on their technology spending this year. With "Meaningful Use" considerations weighing heavily on the industry, many will be investing in or upgrading their electronic health record (EHR) capabilities. And quite a few organizations will also be looking to analytics and other IT initiatives that could help them reduce costs or improve patient care.

However, expensive, proprietary software isn’t the only option for these sorts of initiatives. The open source community has a wealth of projects related to EHR, imaging, and hospital, laboratory and practice management. Small practices and facilities in developing countries, in particular, have found that these applications met their needs while minimizing their expenses.

Open source software solutions for medical practices are dedicated to maintaining a spirit of openness, kindness and cooperation.

The paper analyzes aspects of the selection and implementation the open source software products in worldwide healthcare sectors in order to maximize efficiency of this sector while considerably minimizing their expenses.

**Methodology:** Methodology is based on a comparative analysis the latest scientific and practical articles, discusses, practical examples, the conclusions, the suggestions and the author’s personal experience. Highlighted the main aspects of the adaptation of various specialized software products to specific requirements of health care systems, the overview of information processing systems, used by countries with different economic capacity.

**Findings:** In summary, are highlighted the main problems of the selection, implementation and adaption of ehealth software products and given the recommendations in this area.

**Research limitations:** Design, development, implementation, adaptation of ehealth software is quite difficult and wide theme. This article provides an overview of problems in this area, focusing to open source software applications comparing them with the proprietary ehealth software applications from the biggest software providers, such companies as Microsoft, Oracle, IBM, intended for ehealth.

**Practical implications:** The ehealth market in the world is highly fragmented, reflecting the different national, regional and local interoperability frameworks that are defined by competent authorities. As a result, the ICT (Information and Communication Technology) solutions provided are tailored only for one specific location and thus risk being expensive, non-reliable and non-interoperable elsewhere. Currently, we haven’t enough information about the software, used for ehealth information systems. In this study I will to analyze systems proposed for such companies as Microsoft, Oracle, IBM etc. and highlight potential in using free software in ehealth, such GNU Health, OpenEMR.
OpenMRS, OpenVista and etc. as one of the main pillars for a sustainable framework for providing ehealth for various countries, especially for the poor countries, and countries who are going through the financial crisis.

**Originality:** This study summarizes the analysis, based on the latest research and developments in this area. During the study, was proven implementation methodology, technologies for creation new modules, test systems, developers communities, co-operation systems.

**Keywords:** E-health, e-medical, e-health information system, information technology in health, electronic health record (EHR), electronic patient record (EPR), Electronic Medical Record (EMR), health database, electronic recipe, Hospital Information System (HIS), Health Information System (HIS), Open Source Software (OSS).

**Research type:** General review, viewpoint.
AN APPROACH OF DESIGNING OF DECISION SUPPORT SYSTEM IN SMART HUMAN CLOSED ENVIRONMENT

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Purpose is to propose an approach of designing of the decision support system structure constructed by the software and hardware system of microcontrollers which are introduced in embedded human closed environment (apartment) and can provide the smart services. Depending on the defined rules, system can provide solutions according to the evaluation of real time situations and automatically control the parameters of climate and energy assumption in surrounding of human living. The model of decision support sub-system involves the data of human environment measurement and environment settings. Forecasting results are used for better situation identification.

An approach is based on the design methods of the e-service system which is supported by data collection in human closed environment and monitoring of surrounding. Decision making components help us to analyze these data, forecast and make the decisions. Decision support model is modified according to the environment settings and user needs. The conclusive solutions are provided using adjusted model of configuration using the framework of decision support model and analyzing the collected environment data.

Findings – When using adjustable self-configuring decision support model it is possible to provide e-service solution for human environment situations, according forecasting and historical data. Embedded system for decision model is used as final e-service solution provider to allow decision making and collection of service information at hardware level.

Research limitations/implications – Decision model is adjusted to provide accurate solution for the situation evaluation. But depending on model type, different adjustments are needed. In this work, implementation of state machine for automatic model adjustments is used. Decision support system is highly dependent on forecasting results. Without measurement forecasting data, solution cannot be provided for automatic e-service system.

Practical implications – Described decision support system structure can be integrated in microcontroller based e-service solution in various areas. Then, automatic smart e-service solutions can be provided for energy consumption optimization, for example optimal household energy source usage or vehicle fuel consumption.

Originality/value – the decision support model adjustments using state machine are implemented to provide solutions for specific environment and human needs. After more investigation in this area, described e-service system with decision support, can propose solutions for complex environment settings and user needs, using nonlinear algorithms.

Research type: case study, research paper.

Keywords: decision support system, e-services, smart apartment system, energy consumption monitoring.
POSSIBILITIES OF EVALUATION OF VIRTUAL VALUE CHAIN OF SME BASED ON MULTIPLE CRITERIA OPTIMIZATION METHODS

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Purpose of this research is to present concept/prototype of virtual tool designed for small and medium enterprises (SME) value chain optimization using multiple criteria optimization methods. Some impact factors are analyzed: rapid growing market of business support solutions; complicated value chain design process; constantly increasing number of elements for evaluation.

Design/methodology/approach is based on the review of multiple criteria optimization methods and analysing them by comparing of characteristics of value chain criteria set for selection of most suitable in real situation evaluation. Most of small and medium enterprises with limited resources are faced with difficulties to evaluate large number of different solutions and to select optimal set of tools for value chain optimization. Current situation causes demand for decision supporting system which allows design the value chain processes in according to the criteria system which values reflects preferences of products of consumers.

Findings – value chain design and optimization problems are often multiple criteria. The combination of methods such as Average Hierarch Process (AHP) and Simple Additive Weighting (SAW) allows create a plain and simple virtual tool/support system for small and medium enterprises which will help them to simplify decision making process without significant investments of resources.

Research limitations/implications – there exist large number of multiple criteria optimization methods. The usage of different methods can lead to different results using the same data. Presented tool is limited with 7 evaluation criteria which could be not enough precise in some specific cases (business fields).

Practical implications – an easy to use and inexpensive tool based on multiple criteria optimization methods could allow for SME significantly decrease usage of resources, time and the probabilities of errors in value chain evaluation and optimization decisions. The usage of evaluation tool created on combination of Average Hierarch Process and Simple Additive Weighting would increase number of rated alternatives per same period of time and in this way will increase the quality of decision making process.

Originality/Value – looking at value chain optimization opportunities through usage combination of two different multiple criteria optimization methods.

Keywords: business infrastructure, decision support system, value chain, small and medium enterprises (SME), multiple criteria optimization, AHP, SAW.

Research type: conceptual research paper, prototype presentation.
EVALUATION OF E-HEALTH SYSTEM COMMUNICATION POSSIBILITIES IN DIFFERENT AGE GROUPS OF POPULATION IN LITHUANIA

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The purpose of our research study is to evaluate the situation of possibilities of citizens to communicate with the e-health system and access the e-services. We are trying to found adequate methods for real situation evaluation by comparing digital skills of different groups of citizens and usage indicators of information communication technology (ICT) and e-services in health care area in Lithuania.

Approach the development of ICT allows the simplification of administrative processes in health sector. ICT affect the variety of methods of information collection, dissemination and management in developing the e-health system. It is important to provide services corresponding to the needs of citizens while implementing e-health administration system. While providing e-services it is important to create an interoperable e-services platform that enables the organization of distributed information systems (IS) and interaction of the data bases (DB). It is particularly important to use ICT-based solutions, and understand user communication patterns. To promote the active participation of citizens in the improvement of communication processes shaping the diversity of opinions and offering alternative solutions. The expert survey helps us to reveal the weights of the e-health administrative system by evaluating communication indicators. The significance of e-health communication indicators to the users’ possibilities to access to e-health system was evaluated.

Findings – results consist of individual or collective decisions to act on own life, to implementation of effective ICT in the e-health system activities and using of e-services. An important indicator is the implementation of e-services in activity of citizens by using e-health system. It is submitted as the index of digital skills, e-participation in dealing with activities of citizens directly related with providing services on internet and participating in e-health networks and the citizens' initiative in this area is necessary.

E-service’s impact for users becomes important factor which stimulate the use of e-health services.

Research limitations/implications – the administration system communication indicators may vary over the time. The provided e-services had have different importance for different age groups of users.

Practical implications – the health care organizations using ICT measures have possibilities to increase their efficiency and effectiveness, and thus will improve the quality the administration services and decrease the price of the services;

Originality/Value – In order to promote the active participation of users to users should participate in the improvement of communication processes. The paper presents the e-health administration system communication indicators that significantly influence the e-health administration communication system.

Research type: research paper, viewpoint.

Keywords: e-health system, e-services, information and communication technology (ICT), communication possibilities.
Session 3: E-Health

Moderator: Prof. dr. Danguolė Jankauskienė, Mykolas Romeris University
THE EUROPEAN EXPERIENCE IN THE AREA OF NATIONAL PROCESSES OF ICT IMPLEMENTATION IN HEALTHCARE SECTORS: A FRAMEWORK FOR IN DEPTH ANALYSIS OF THE PROCESS IN EACH EU MEMBER STATE

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Purpose – Nobody will argue about the growing importance of ICT in human life including public policy domains and the delivery of public services. Nationally integrated eHealth infrastructure and information systems are now viewed as key enablers for safe, efficient, high quality, patient-centred and seamlessly delivered healthcare. Yet high failure rates of complex ICT projects, which are typically associated with the national process of ICT implementation in health, often lead to wasted public finance investments and failed processes in a highly risk-sensitive environment such as healthcare. Analysis of the international and European experience so far shows that there are two main approaches emerging. The more “successful” countries in this respect have more features of a so called the “Welsh approach” (for instance, Denmark, The Netherlands, Finland and other), the others are following more “traditional” or a so called the “English approach before 2013”, because in 2013 the high level governmental officials in the UK have acknowledged the inappropriateness of the approach used in the last 10 years to achieve the ultimate goals of e-health development process at a national level. One of the main goals of this presentation is to introduce the main characteristics of both models and to offer a convenient tool for the analysis of the national e-health development processes, by paying more attention to evidence-based success factors.

Design/methodology/approach – The presentation is based on the theoretical - conceptual insights, but at the same time, seeks to offer a very practical evidence-based process analysis tool for practitioners.

Findings – The main pre-condition of a successful e-health development is the view that ICT implementation in healthcare is more socio-organisational process than a technical one and that patient-focused approaches of healthcare delivery require changes in work organisation and in an overall delivery of healthcare services. Unlike the predominant technical / functionalist paradigm in IS research and many difficulties encountered in deploying ICTs in health in practice within that philosophical approach, the framework emphasises the need for organisational learning through multi-level stakeholder engagement and “orchestrated” organisational change, where organisational change process in relation to eHealth development at the national level with multiple stakeholders, powers and interests is seen as mainly communication problematic. The biggest focus here is placed on stakeholder engagement: it was identified that stakeholder (and especially the user) engagement may contribute to the improved change communication, change receptivity, change ownership and commitment towards change, considerably increase internal (within the healthcare sector) cooperation and trust, as well as ability of crossing organisational and professional boundaries, it also highly contributes to organisational learning / innovation / quality of healthcare and sustainability of organisational change. Therefore stakeholder engagement contributes to the overall management of organisational change through multi-dimensional learning process by increasing overall commitment to changes in work organisation. At the same time stakeholder engagement contributes to the overall technical deployment of ICTs in health through clarification of users’ needs and specification of users’ requirements by developing innovative and suitable to use ICT systems. ICTs on their own part have to be seen as tools for organisational change in healthcare, not as an ultimate goal in itself.

Research limitations/implications – It would be interesting to enrich the e-health development framework as well as its process analysis tool with new empirical data from the countries not yet researched although demonstrating good practice examples.

Practical implications / Originality/Value - The presentation is based on in depth analysis of number of countries demonstrating considerable process in e-health development. Process analysis tool that is offered here allows to answer the following questions like: how the national processes of ICT deployment in health are managed internally in each member state, what are the factors that influence the success or failure of the nationally implemented e-health programmes and projects, are there any approaches or guidelines that could guide or warn against the member states in the national processes of ICT implementation in healthcare sector.

Keywords (3-5): e-health; information and communication technologies (ICT), health sector.

Research type (choose one): conceptual paper.
Acknowledgments: The research was supported by European Social Fund under the measure „Support to Research Activities of Scientists and Other Researcher (Global Grant)” administrated by Lithuanian Research Council (grant No. VP1-3.1-SMM-07-K-02-029).
E-HEALTH RECORD AND LEGAL REGULATION
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Purpose – to analyse legal regulation of the electronic health record: (1) To investigate legislative regulation of the electronic health record with regard to the strategic and basic legislation; (2) To analyse legislative regulation of the electronic health record in the field of privacy protection.

Methodology – Several different methods have been applied to perform an investigation: while investigating the legislative regulation and the relevant legislative norms of the electronic health record, the author used a comparison method. The empirical method of analysis of legislative documents has been applied to determine the legislative regulation of the valid electronic health record. This method allows to identify accurately and to describe the valid legislative regulation of a respective relationship. While using the resources of scientific literature, a deduction method has been applied, which allows to draw sufficiently reliable conclusions. The newest scientific literature has been invoked for the study of concepts.

Findings – The study revealed that electronic health record is regulated in strategic e-health documents of both the EU and foreign countries. In Lithuania, this practice also exists: a lot of attention is given to the electronic health record in strategic Lithuanian documents on e-health thus creating a basis for further legislative regulation by fundamental and other norms.

Three different models of electronic health record are applied in Europe. In the examined laws of the selected foreign countries, the electronic health record is validated as a separate institution regardless of the selected model.

One article, establishing some fundamental basis of the e-health system, is dedicated to the e-health system in fundamental Lithuanian legislative rules. In Lithuania, the model of the centralised e-health system, which is also called a Scandinavian model, has been selected. However, the electronic health record is not specially regulated in fundamental Lithuanian rules of law.

Legislation of the Republic of Lithuania (to comply with the EU Data Protection Directive 95/46/EC) ensures adequate legislative environment with regard to the legislative protection of privacy in the case of electronic health record. However, the legislative rules on the identification of electronic data systems are only consolidated in statutory instruments.

The EU Data Protection Directive provides for a ban on the processing of personal data concerning health. However, introduction and use of electronic health record systems could be treated as an important public interest (an exception provided in the Data Protection Directive).

In addition to examined legislative problems of the electronic medical record, the following issues of legislative regulation are relevant as well: security of electronic health records (data breaches, information about data breaches, different security levels), retention of electronic health records, e-rights of patients to electronic health records, sending of electronic medical records to other countries, receiving of electronic health records from other countries.

Research limitations – Because of a limited research scope only strategic and basic legislation, also legislation regarding privacy in electronic health records were researched and conclusions were drawn based on the made analysis.

Practical implications – The results provide an opportunity to adopt the good practice of legislative regulation of electronic health records from the EU and the relevant EU countries that are leaders in the field and have significant experience.

Originality/Value – The electronic health record is considered as the basic component of e-health upon which the functioning of national e-health depends. Therefore, the legislative environment of the electronic health record is one of the most important institutions of healthcare converging to the electronic environment. In Lithuania, these processes are only starting; thus, it is important for Lithuania the evaluation of the current legislative, regulatory situation.

Keywords: e-health record, legal regulation.
Research type: research paper/case study.
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E-HEALTH AND LEGAL REGULATION

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Purpose – to analyse legal regulation of the electronic health: (1) To analyse the legal regulation of e-health in the EU. (2) To analyse the legal regulation of e-health in the certain EU Member States and in certain non-EU countries. (3). To analyse the legal regulation of e-health in Lithuania.

Methodology – The following research methods were used to complete the objectives of the research: comparison, document analysis, deduction. The examination of the e-health legislation in the EU, individual foreign countries and Lithuania was completed by using the method of comparison (rules of law relating to the general legal regulation of e-health, the institution of consent to process personal data on health, etc. were compared). To determine legal regulation of a valid e-health record, the empirical method of legal document analysis was applied. This method allows analysing official documents to identify accurately and describe the valid legal regulation of a respective relationship. The deduction method applied using scientific literature resources allows sufficiently reliable conclusions.

Findings – The study revealed that currently, for the most part, the e-health vision in the field of e-health is yet in the process of formation. Regulation regarding the initiation of certain processes (adoption of guidelines, etc.) has also begun. This should be seen more as the initial steps in e-health to develop a common regional e-health policy. With regard to the binding legislation in the field of e-health, Directive 2011/24/EU on patients’ rights only initiates certain processes in e-health (development of guidelines, etc.). However, so far it does not provide any principles of operation of regional e-health systems and does not ensure the practical operation of such system as of the specified date.

Personal data protection in e-health is regulated by the EU through common privacy protection standards. However, the data protection reform has a sufficient importance in this field. The draft regulation mainly focuses on the institution of consent to process health data. However, documents for this reform are yet to be finally adopted. Consideration of the opinion issued by the Article 29 Working Party of the Data Protection Directive is also important for the processing of personal data in healthcare systems.

At present, legal regulation of e-health in the EU Member States is rapidly developing. However, it still contains many differences and lacks a unified policy and strategy. Different models of electronic health records are applied. Regulation of the consent to process personal data for the purposes of e-health differs considerably. In addition, national laws in the countries under investigation do not regulate interoperability of local e-health systems with e-health systems operating in the other EU Member States. In relation to legal liability for abuse or careless processing of information in electronic health records, the general liability is applied in all the countries under investigation, and no special liability is established.

Processes of e-health legal regulation are gaining pace in other non-EU countries as well. It should be noted that, first of all, the legal regulation is introduced starting from the fundamental rules of law and later — by statutory instruments. However, there are many noticeable differences in e-health regulation that emerge from a comparison of these countries among them or with the European Member States (different regulatory instruments, etc.).

Lithuania has a number of valid documents: the eHealth Development Strategy, the Programme for the Development of eHealth System and the Action Plan of the Programme on the Development of eHealth System. However, all these documents provide goals and measures for up to 2015. The fundamental legal regulation on e-health has not yet established relevant provisions regarding the electronic medical record/electronic health records; whereas, the fundamental legal regulation on patients’ rights and compensation for personal injuries does not correspond to today’s realities. Personal data protection issues related to eHealth systems are regulated by general rules of law regarding the protection of privacy.

Practical implications – Legal regulation of e.health in EU, also separate EU and elected non-EU countries was structured, legal analysis of e.health legal regulation in Lithuania was made. The results provide an opportunity to adopt the good practice of legislative regulation of electronic health.

Originality/Value – As stated in the Communication eHealth Action Plan 2012–2020 — Innovative healthcare for the 21st century, removal of legal barriers is critical for eHealth development in Europe. The measures taken by the EU itself in order to coordinate eHealth legal regulation in the EU Member States are therefore necessary. Regulation of the field of e.health in the individual EU Member States is also significant. To compare, it is important to analyse certain
non-EU countries and their current e-health legal environment. Legal regulation of e-health in Lithuania was be examined in the context of this analysis.

Keywords: e-health, legal regulation.

Research type: research paper.

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eHEALTH SYSTEM IN LITHUANIA FROM THE PERSPECTIVE OF USERS

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Purpose – to find out the degree and trends of stakeholder involvement in the process of e-health development in Lithuania.

Design/methodology/approach – The three representative quantitative studies have been carried out using quantitative sociological research methodology. Methods chosen were questionnaire-based surveys carried out as respondent interviews in the period June – October 2013. Survey target groups were selected depending on who are the main users of the e-health system. Such users were: the staff (doctors, nurses and laboratory assistants) of Lithuanian healthcare institutions, healthcare institution executives and Lithuanian population representing the general set. Instruments chosen for the research were original author-produced survey questionnaires separate for each group under research. “The questionnaire for the research has been produced based on the theoretical integrated social/technical attitude concept, as well as on e-health key elements, also, on instruments for the management of work with stakeholders, which instruments have been worked out based on authors Friedman and Miles and the levels of stakeholders engagement. The questionnaires were based on the logic prompted by the current e-health development range of problems found during previous qualitative researches”. Data analysis has been performed using SPSS for Windows statistical package (version 15.0). Statistical relations between the attributes has been assessed using the Chi-square (χ2) criterion. For the purpose of hypotheses testing, the selected level of significance was p < 0.05. With the aim to determine what statistical criteria should be used, calculation was made to see whether the survey data were distributed by the normal distribution or not. To determine whether the data have normal distribution, Kolmogorov-Smirnov Z test was calculated. Indication of whether the distribution is according to the normal distribution regulation is the result of the p value, i.e., if the resulting p value is > 0.05, the data distribution is not according to the normal regulation.

Findings – Rapid development shows that this particular strategic health policy trend brings results. According to the data of our surveys, the trends of e-health further development are good and positive: two thirds of executives of healthcare institutions have envisaged e-health development in the strategic plans for the development of their institutions, a third of them know all e-health modules. This allows supposing that the present health management innovation will be developed in future. The vast majority of the population have in their life experience already used — in one way or another and in different scope — some (albeit a small number) of the already implemented e-health services. A more in-depth analysis of the scope of e-health has revealed that “e-health modules or technological solutions implemented in Lithuania that healthcare system employees know the best are as follows: online patient registration, sick leave fill-in, patient insurance status and registration e-tracking, statistical outpatient accounting form online fill-in (current 025/a-LK-form). One of the main reasons why the users are little informed and use e-health systems to a low extent is not only accessibility to the e-health system, but also the involvement of the interested parties into the decision-making process.

Research limitations/implications – research executed in Republic of Lithuania, accordingly causal relationship in other societies might vary.

Practical implications – research results allowed to better understand eHealth development process from the viewpoint of user in the Republic of Lithuania. Research team prepared recommendations for situation improvement.

Originality/Value – research encompasses all eHealth users, due to this fact, a generalized understanding of users’ (as stakeholder’s) viewpoint on the matter is available.

Keywords: eHealth, IS users, Republic of Lithuania.

Research type: research paper

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ANALYSIS OF E-HEALTH PROJECTS IN LITHUANIA
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Purpose – to review and undertake the comparative analysis of the key Lithuanian projects related to e-health for the period 2004–2015 (including the projects with the planned closure in 2015 as per the Programme on the Development of eHealth System of the Republic of Lithuania for 2009–2015).

Design/methodology/approach – analysis and comparison of projects delivered in the period 2009–2015 were based on the investigation of secondary information sources as well as the content of the website www.esparama.lt. The content analysis were chosen considering the fact that the tool “Map of Projects” offered by website www.esparama.lt is the most convenient way to collect data on projects that have already been implemented or are in the stage of implementation in Lithuania.

Findings – the period from 2005 to 2009 (the first national e-health system development in Lithuania as well as stages NESS-1 and NESS-2), can be identified as failure. The primary causes of failure: inaccurate and exceptionally complicated aims; project content problems, e.g. changing requirements or technical complexity; insufficient skills and competencies of project executors or the team; implementation problems; the lack of legislative and regulatory documents as well as the fragmented e-health system. The period from 2009 is marked by a rather active implementation of the Programme of the Development of eHealth System for 2009–2015, execution of the key national and regional e-health development projects, and various attempts to engage stakeholders (residents, patients, healthcare specialists, healthcare service providers, administrators and politicians, and IT companies) into the design process of documents and legislative acts as well arranged consultations. Time since 2009 may be referred to as the breakthrough period of e-health, which finally pinned down the definition of e-health; redefined the establishment of the e-health system; approved the articles of association of ESPBI IS, which appointed the Ministry of Health as the manager of the system and the State Enterprise Centre of Registers — which has a strong information database and infrastructure — as the administrator; as well as designed and signed-off new architecture model of the e-health system.

Research limitations/implications – no information about e-health projects delivered prior to 2009 had to be made publically accessible; therefore, additional project search and analysis was delivered following the priorities of the Lithuanian Single Programming Document for 2004–2006, namely, the Measure 1.4. Restructuring and Upgrading of Healthcare Institutions, the Measure 3.3. Development of Information Technologies Services and Infrastructure and the Measure 5.1. Support for Programme Management, Implementation Monitoring and Control (ERDF). Moreover, the analysis also focused on projects that have an impact on e-health while having no direct connection with it.

Practical implications – analysis of e-Health projects in Lithuania would provide a faster access to detailed information about e-Health projects and other e-projects in real time for healthcare institutions, patients, healthcare specialists, healthcare service providers, administrators and politicians, IT companies, students.

Originality/Value – analysis of e-Health projects in Lithuania aims to disclose the environment (context and “reality”), in which projects were formed; present aims of e-health projects; name target groups, project promoters, partners and other stakeholders; identify key sources of funding; list names of IT companies that won public tenders for project implementation; and investigate the status of projects and implementation timescales.

Keywords: e-Health projects, e-Health system, funding, implementation
Research type: research paper

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**Towards More Inclusive EHealth Development**

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**Purpose** – striving for innovative and sustainable health care system, to assess the extent of e-health development and trends from the perspective of stakeholders’ network, as the most important success factor in the e-health deployment. We present results of the research project “Integrated Transformations of EHealth Development: the Perspective of Stakeholder Networks”, which was supported by European Social Fund under the measure „Support to Research Activities of Scientists and Other Researcher (Global Grant)” administrated by Lithuanian Research Council (grant No. VP1-3.1-ŠMM-07-K-02-029).

**Methodology** – document analysis was applied for identification of findings of former research, analysis of Lithuanian eHealth laws, strategies, and eHealth projects. Comparative analysis was used when experience in neighbouring countries was researched. Semi-structured individual and group interviews were executed to allow the diagnosis of the content of participation of the stakeholders in the e-health design and deployment process and provide the cause and effect context for the analysis of e-health elements. In total, 60 interviews were executed in healthcare institutions and state governance bodies in 9 cities of Lithuania. Nvivo and Atlas applications were used for data processing in this research. To explore the extent and trends of the engagement and participation of stakeholder groups in the process of eHealth development, method of quantitative survey was applied. The representative sample of key eHealth stakeholder groups, such as policy decision makers, health service providers, IT suppliers and consumers was questioned assessing the level of public awareness and satisfaction levels in relation to a current state of eHealth development. To determine the extent to which the developers, implementers and users of eHealth system represent their legitimate interest and to explore the nature of cooperation between the participants and the dynamics of these relationships, Social network analysis (SNA) was performed.

**Findings** – Compared to the analysis made by the Ministry of Health of the Republic of Lithuania in 2011, the national e-health development is showing a positive trend. While, in 2011, only a quarter of all surveyed institution had e-health systems, our study demonstrated that at present, 67 per cent of professionals working at healthcare institution use e-health information systems on a daily basis. Such rapid development shows that this strategic policy are is bringing results.

Only a small number of healthcare professionals believe that Lithuania has a sufficient range of e-health information systems. In the current period, the following e-health services are mostly developed in Lithuania: online patient appointment reservation, completion of medical statements, online tracking of patient insurance and enrolment, online filling of the statistical form of outpatient accounting. Significant inequalities exist in the overall development of e-health services as well as their accessibility and use among medical professionals and residents.

Patients are almost completely ignored in the process of e-health development and deployment. Their role is mostly theoretical, based on knowing that they seem to be important for product development; however, no real efforts are made to make this practice operational.

The Ministry of Health has too many functions in the field of e-health while too few of them are entrusted to healthcare institutions. This can be partly explained by the novelty of the e-health and evaluation of errors made during the first stage of the system’s development when processes of e-health development lacked leadership and coordination of the Ministry. However, currently, there is a lack of bolder leadership among healthcare institutions in assuming functions of decision-makers. Still, a trend is observed that despite the state of the knowledge cycle, e-health participants would want to have a strong coordinating party at each stage.

The results of the qualitative survey show a shift in the attitude towards various e-health participants and their roles. Increasingly more attention is given to the need to exchange knowledge and experience, and consideration of each other’s needs and expectations. However, it is not always clear, who of e-health participants — medical professionals or patients — are end users and should receive most benefits.

**Research implications** – We developed the model promoting stakeholder engagement and participation. The model of the eHealth Platform for Stakeholder Cooperation (PSC) is based on the lifecycle of ideas, in which the main object under management is an idea, which survives all knowledge management cycles from accumulation to gestation of ideas.
Practical implications – The accomplished qualitative research has revealed the attitude of e-health participants that the success of the e-health development is very much dependant not only on the technical and technological solutions of IT systems, but a no less important is to set the scope and goals of the e-health system application, to have legal regulation, consistency of IT systems and activity processes, stakeholders’ involvement. The findings could help decision makers to understand better stakeholders’ expectations and problems they face in e-health development. Consequently, decisions that better match diverse interests of e-health stakeholders could be taken.

Value – The design of the stakeholder cooperation model is dedicated to the description of necessary managerial conditions and links between them, which determine support to stakeholder engagement and participation in the development of best e-health system solutions. Proposed research-based political, organisational and managerial measures for the implementation of the model could contribute to enhancement of efficacy of e-health development process.

Keywords: e-health, e-health stakeholders, stakeholder engagement.

Research type: research paper.

Acknowledgments: The research was supported by European Social Fund under the measure “Support to Research Activities of Scientists and Other Researcher (Global Grant)” administrated by Lithuanian Research Council (grant No. VP1-3.1-ŠMM-07-K-02-029).
QUALITATIVE STUDY OF E-HEALTH STAKEHOLDERS’ PERCEIVED ROLES AND PROBLEMS THEY FACE DEVELOPING E-HEALTH SYSTEM

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Purpose – to diagnose the content of participation of the stakeholders in the process of e-health design and deployment, attitude of the participants toward own role and roles of other e-health system and e-health system’s problems on various stages and aspects of its design and deployment.

Methodology – Qualitative research strategy and research instrument was formed so as to allow the diagnosis of the content of participation of the stakeholders in the e-health design and deployment process and provide the cause and effect context for the analysis of e-health elements. List of respondents was made using the results of analysis of the sources that provide information on institutions involved in e-health process. We selected the respondents ensuring their variety in terms of represented institution type, geographical diversity, work position, experience in e-health development. Institutions represented by the respondents were divided into 5 groups (polyclinics or primary healthcare centres, clinics and hospitals, state regulation institutions, IT and consulting companies, and private healthcare institutions). Positions of the respondents were classified into 5 groups (administrators, doctors, nurses, IT department managers and employees in healthcare institutions, civil servants, e-health project managers and coordinators in healthcare institutions and IT companies, managers in IT and consulting companies). Positions of the respondents were classified into 6 groups (administrative staff in healthcare institutions, doctors and nurses, IT department managers and employees in healthcare institutions, civil servants, e-health project managers and coordinators in healthcare institutions and IT companies, managers in IT and consulting companies). In total, 60 interviews were executed in healthcare institutions and state governance bodies in 9 cities of Lithuania. Nvivo and Atlas applications were used for data processing in this research.

Findings – The participants of the e-health system, representing all groups of respondents, agree with the need to closely cooperate in the development of the information systems in healthcare institutions. Involvement of employees from all the levels is imperative — administrators, doctors, nurses, IT specialists should be included. But the research shows that so far such cooperation usually occurs mainly within the organisation. Meanwhile, the cooperation between the institutions on shaping of the e-health policy, development and implementation of the e-health solutions is still fragmentary, based more on the personal communication, rather than a systematic transfer of knowledge. So far there is no platform established, connecting participants of the e-health system into a network, and ensuring their communication and knowledge transfer.

Interviews revealed that most of the problems, having impact on the efficiency and effectiveness of the development of the e-health system, are within the areas of the legal framework for e-health systems and regulatory mechanisms, cooperation and communication of the system participants. Deficiencies in these areas determine internal problems of the healthcare institutions in planning e-health solutions and their implementation, as well as shaping the solutions of the information systems’ architecture and design and implementing them.

Research implications – The accomplished qualitative research has revealed the attitude of e-health participants that the success of the e-health development is very much dependant not only on the technical and technological solutions of IT systems, but a no less important is to set the scope and goals of the e-health system application, to have legal regulation, consistency of IT systems and activity processes, stakeholders’ involvement.

Practical implications – the research presents opinions of diverse stakeholders’, who usually were detached from e-health development process. Generalized attitudes of diverse stakeholders’ and comparative analysis of opinions within and between different stakeholders’ groups could help decision makers to understand better stakeholders’ expectations and problems they face in e-health development. Consequently, decisions that better match diverse interests of e-health stakeholders could be taken.

Value – the research revealed, that on the opinion of the management and specialists of healthcare institutions as well as of the leaders of IT companies, the main reasons for failures of the Lithuanian e-health system development during the first stage was the inefficiency of the Ministry of Health to mobilise all the stakeholders, to properly assess and coordinate their needs and to prepare a reasonable strategy and legislation, supporting its implementation. Once the mistakes of the past are evaluated, more active positive changes could be triggered striving to achieve more efficient and effective e-health system development.
Keywords: e-health, e-health stakeholders, stakeholder engagement.

Research type: research paper.

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THE E-HEALTH PLATFORM FOR STAKEHOLDER COOPERATION
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Purpose – to create the model for the e-health stakeholder cooperation platform, which could help to establish the interface between the stakeholders with the aim of development new quality of collective knowledge.

Design/methodology/approach – prerequisites of the e-health cooperation platform for stakeholder cooperation are explained via the hierarchy of health innovations and interface of management theories. Research is based on superposition of four paradigms: 1.) the knowledge management stipulates the aims of the developed platform (to accumulate and analyse knowledge); 2.) management of collective intelligence defines the purpose of the e-health cooperation platform (to establish the interface between the stakeholders aimed at developing new quality of collective knowledge); 3.) the stakeholder management specifies the users of the e-health platform (who are the e-health stakeholders and how to recognise them); 4.) the team role theory helps to identify stakeholder interaction patterns and obstacles hindering the joint actions.

Findings – The model promoting engagement and supporting participation is aimed to describe the necessary management conditions and their interfaces determining the stakeholder engagement and participation support in establishing the best e-health system solutions. Structurally the model is based on the three elements: participants, a set of roles necessary for collaboration, measures for collective intelligence management, knowledge management process and interaction. The model indicates a three-dimensional nature of engagement. Effectiveness of the knowledge management process and interaction is a dynamic function depending on the collective intelligence management tools, the completeness of the engaged stakeholder group, quality of the role-play relevant for collaboration, and effective interaction. Testing of the e-health platform for stakeholder cooperation reveals the necessity of the e-platform.

Research limitations/implications are based on the main principal of the e-health platform for stakeholder cooperation, which is the idea’s life cycle where idea is the basic object of management passing through all knowledge management cycles, starting from the idea generation and finishing with the idea maturity. Ideas are both positive statements sounding like a new thought aimed to describe or change the current state of the e-health development, and negative statements which may sound as a claim or criticism. The idea management requires moderator that can course the increase of platform running cost.

Practical implications – IT-based collaboration systems shorten the remote social relations or establish the ties which in real life could never be developed. Since the e-health stakeholder CP is not yet operational, social relations are very rare and remote, and trust is very fragile. This was confirmed during the testing procedure.

Originality/Value – The model is a set of actions, which serving as the basis for the development, testing and implementation of an interactive internet interface within the platform. It is described as detailed scheme to connect the stakeholders’ views with the multi-criteria e-health system elements by specifying the hierarchy of the evaluation criteria of the e-health as a system anticipating their peer-reviews and ensuring the feedback for system users.

Keywords (3-5): knowledge management, stakeholder management, collective intelligence, team role theory, e-health, platform for stakeholder cooperation.

Research type (choose one): research paper.

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Following the internet design, societies, organizations and movements have evolved from bureaucratic/centralized to both decentralized and distributed networks that have started to impact business, governments and our societies at large. Social Technologies is an interdisciplinary research field, which focuses on applying information, communication and emerging technologies to serve society goals. We define Social Technologies as all technologies applied by citizens to serve society goals. This year special attention of the conference was given to e-Health issues.

Texts are not edited.

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