# ICTM 2016

## Proceedings of the International Conference on ICT Management for Global Competitiveness and Economic Growth in Emerging Economies

**Conference Theme:**
**Economic, Cultural and Social Innovations for Human Capital in Transition Economies**

Organizers:



University of Wrocław, Poland
Polish Chapter of Association for Information Systems (PLAIS)
Linköping University, Sweden
The College of Management "Edukacja", Poland
University of Zielona Góra, Poland
Polish Association of Analytical Psychology (PTPA), Poland
Hochschule für Technik und Wirtschaft Dresden, Germany

**European Capital of Culture 2016**

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# 1.    From the Conference Co-Chair

New information and communication technologies impose on the contemporary world such a dynamics that the resulting synergy and convergence effects of transformational change simultaneously within economical, social and cultural realm are difficult to predict. As a result, within growing complexity and unpredictability of the ambient conditions, there is no defined, closed repertoire, strategy or solution, whether business oriented or institutional that provides both effective and innovative approach to the increasing structural problems of the global environment. The only existing solution to maintain a sustainable competitive advantage within the today world of permanent and endogenous change seems to be the human capital (potential) involvement: its creativity and innovation approach, which solely can become a source of Schumpeter's creative destruction.

This implies in case of emerging economies, which are still lag behind the mature, developed countries both in economic, social and cultural standard of living that to close this gap, the interdisciplinary approach to human capital (human resources) is required. This is especially so in reference to the transformational potential of information and communication technologies (ICTs) with its new management techniques, new business models, and new regulatory policies. Thus, the objective of this conference is to provide a forum for interested researchers and practitioners to exchange their experiences and creative ideas related to ICT management for global competitiveness and economic, social and cultural growth in emerging economies. Possible topics may include but are not limited to the following:

- Economical, psychosoacial and legal frameworks as they relate to ICT and ICT Management;
- Unique ICT management techniques for emerging and transition economies;
- Methods for measuring the benefits and costs of projects involving the adoption of ICT;
- The role of human and social capital;
- Gender and other socio-demographic factors in human and social capital and in innovations processes;
- Innovative ways for generating revenues and creating commercial knowledge products;
- Educational systems and training as they relate to ICT and ICT Management;
- ICT innovations to support small and medium enterprises;
- ICT innovations as a path to economic growth;
- ICT productivity with specific reference to the prevalent social and business conditions;
- Global supply chain management in emerging and transition economies;
- Country specific case studies, with specific reference to the prevalent psychosocial and business conditions;
- ICT off-shoring/outsourcing into emerging and transition economies;
- ICT project management, with specific reference to the prevalent social and business conditions;
- Digital divide in emerging and transition economies;
- E-Commerce impact in emerging and transition economies;
- E-Government in emerging and transition economies;

- Psychological, social, and economic aspects of Internet use in emerging and transition economies;
- Virtual reality in psychological treatment and psychotherapy;
- Analytical psychology and psychotherapy in era of new technology;
- Information and communication technologies in personnel recruitment, assessment and development;
- Leadership and new technologies;
- Psychological aspects of working in a virtual team;
- Information and communication technologies in an ageing society; and
- Quantitative methods and information technology in management.

Note:

Contributions to any of the directions within the spectrum of the *ICTM2016* paradigm are welcome.

The four categories for proposals are: (1) abstracts, (2) individual papers, (3) posters, and (4) *e-posters*.

Three kinds of publications are planned, the first one - a monograph, in which the papers with up to 20000 characters in English be will be included; the second one, in which the articles in a smaller volume will be published. The monographs will be submitted for inclusion in the Citation Index by Thomson Reuters. Paper should also be accompanied by a summary in English. By the viewers top rated papers that were submitted to the ICTM 2016 and written in English will be published in special issues of international scope of information journals: *Information Systems Management*, *Economy Market Education* and *Polish Journal of Applied Psychology*.

## Track 1
### Communication in Management and Psychology:

*Track Chairs:*

**Jolanta Kowal**, *University of Wroclaw, College of Management "Edukacja", Poland*
**Piotr Soja**, *Cracow University of Economics, Department of Informatics, Poland*
**Grażyna Paliwoda-Pękosz**, *Cracow University of Economics, Department of Informatics, Poland*

Emerging economies with their dynamic development and rapid growth are often considered the engines of the global marketplace. Unfortunately, despite this vigorous economic growth, most emerging economies still lag behind the mature, developed countries in economic output and standard of living. To truly close this gap, new management techniques, new business models, and new regulatory policies, among other factors may be needed. Moreover, information and communication technologies (ICTs) will likely play a vital role in this development process. Thus, the objective of this section is to provide a forum for interested researchers and practitioners to exchange their experiences and creative ideas related to ICT management for global competitiveness and economic growth in emerging economies. Possible topics may include but are not limited to the following:

- Social, political and legal frameworks related to ICT and ICT Management;
- Unique ICT management techniques for emerging and transition economies;
- Methods for measuring the benefits and costs of projects involving the adoption of ICT;

- The role of human and social capital;
- Innovative ways for generating revenues and creating commercial knowledge products;
- Educational systems and training as they relate to ICT and ICT Management;
- ICT to support small and medium enterprises;
- ICT as a path to economic growth;
- ICT productivity with specific reference to the prevalent social and business conditions;
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- Digital divide in emerging and transition economies;
- E-commerce impact in emerging and transition economies;
- E-government in emerging and transition economies;
- Psychological, social, and economic aspects of Internet use in emerging and transition economies; and
- Quantitative methods and information technology in management.

## Track 2
### Communication in Education:

*Track Chairs:*
**Ralph Sonntag**, *Hochschule für Technik und Wirtschaft Dresden, Germany*
**Jolanta Kędzior**, *University of Wrocław*

Possible topics may include but are not limited to the following:

- New technologies and trends in education and social communications;
- New technologies in education in global educational space, E-Learning platforms, exchange of ideas, experiences, creating joint study programs, E-Publications, virtual libraries, virtual campuses, the use of E-Learning and communication mediated by modern media in scientific research and teaching (conference room, voice chat, diagnosis, skills, problems with the use of new means of communication), E-Learning in professional development, creating, popularization, the use of knowledge;
- Educational function of computer games;
- Edutainment (entertainment education)- knowledge, competences, attitudes, entertainment, social change;
- Media competences of different social groups (diagnosis, developing of key competences), new technologies and child development;
- New form of social communications;
- New technologies in interpersonal communications in different social groups (family, education, labour market institutions, NGO, civic movements, social environment in the internet), social conflicts; and
- Wiki technology- wikinomy (openness, partnership, cooperation, global collaboration, experts community), E-Inclusion.

## Track 3
### Analytical Psychology and Psychotherapy in era of new technology:

*Track Chairs:*
**Krystyna Węgłowska-Rzepa**, *University of Wrocław, PTPA, Poland*
**Aleksandra Szczepaniak**, *PTPA, Poland*
**Joanna Kasha**, *Jagiellonian University, PTPA, Poland*

Reflection upon analytical psychology and psychotherapy conducted within era of new technology in refers to different aspects: technological enabler/conduit of psychoanalytical or psychotherapeutical relation/s re-mediated via new media/ internet, social aspect of new technology (new ways of creating identity: both individual and collective) and last but not least, cultural aspects of new technology (excess of symbolic and cultural content - permeation of psyche and cultural content: symbols, meanings, narratives, experiences, modalities).

Such changes evoke ambivalent feelings and reflections on both sides. Consequently, the effects of the new technology need to be thoroughly analysed, including among others: indication of the benefits and difficulties, the impact of new technologies on the classic process of psychotherapy or psychoanalysis (along with its phenomena like transference and countertransference), the emergence of new phenomena specific to the therapy via internet/ new media, as well as the implications of conducting counselling, psychotherapy and psychoanalysis by internet for the long-term development of the individual.

## Track 4
### Language in Communication:

*Track Chairs:*
**Anna Kuzio**, *University of Zielona Góra, Poland*

Language is essential to everyday human interaction. We use language to inform other people of what we feel or desire and how we understand the world. We communicate effectively using words, gestures, and the tone of voice in a multitude of situations and for a variety of purposes. The capacity for articulate discourse is what makes us distinct from other living species. The objective of this section is to provide a forum for interested researchers and practitioners to exchange their experiences and creative ideas related to linguistics in its broad sense. We especially welcome papers which re-examine existing frameworks for critical discourse research and/or which highlight and apply new methodologies sourced from anywhere across the humanities, social and cognitive sciences. Possible topics include, but are not limited to, the following:

- Discourse analysis;
- Political and media discourse;
- Advertising;
- Discourses of war and terrorism;
- Discourses of discrimination and inequality;
- Power, ideology and dominance in institutional discourse;
- Identity in discourse;
- Education discourses;

- Environmental discourses;
- Health communication;
- Language and the law;
- Translation;
- Applied linguistics;
- Language teaching;
- Lexicography;
- Corpus linguistics; and
- Intercultural communication.

## Track 5
### Cultural Herritage and Creativity in The Economy of Tourism

*Track Chairs:*
**Lesław Koćwin**, *College of Management "Edukacja", Poland*

The culture, including communication, plays a significant role in analyzes of potential for development, as well as programs and plans for tourist areas. In terms of economy of tourism it is expressed in defining the role of historicaland contemporary cultural content as a leading motive of various tourism products.

The authors of these products are local communities which wish to improve the quality of life, as well as motivated by commercialism organizers of economic life.

In this perspective it can be observed within the tourism environment the occurrence of "creative regions", "creative cities" and "creative villages" inhabited by "creative communities", governed by the "creative class". As significant for these locations and communities are "creative industries" that are also identified as "cultural industries". There are a variety of activities related to the protection of historical content, the evolution of new content and their dissemination. These activities cover multiple fields of cultural life such as conservation of historical monuments, museology, archeology, architecture, music, visual arts, industrial design, crafts, media, and publishing.

The aim of the panel is to consider the nature of relationship between creativity and economy of tourism. In particular it concerns the activity of the creative and business environment in the form of local government units, schools and universities, cultural institutions and non-governmental organizations. They just are involuntary or intentional authors of entering the tourism market "cultural" tourism products. Their activity is the answer to the needs and trends in tourism, as well as an inspiration for the organizers and entrepreneurs operating in the sphere of tourism.

Range of topics: In research reports and reflections from personal experiences which are the basis for discussion and exchange of views, the references to the following problems are sought:

- Specifics of the creative sector in tourism;
- Art as a response to new needs and trends in the contemporary tourism;
- Trends and needs of the creative sector;

- Management of the creative sector in tourism;
- Institutional support for the arts for the purposes of tourism;
- Linking science and business in the area of creative industries;
- Originality of "cultural" tourist products in the light of ethics and law; and
- Economics of the production of "creative products" for the purposes of tourism.

## Track 6
### Gender in ICT management in the context of social and digital inclusion

*Track Chairs:*
***Ewa Soja**, Cracow University of Economics, Department of Demography, Poland,*
***Jolanta Kędzior**, University of Wrocław, Poland*
***Anna Mitrega**, University of Wrocław, Poland*

The goal of this panel is to develop discussion on the present and future position of gender issues in management, in the context of social and digital inclusion. The topics of the panel can be among others:

- International, interdisciplinary and cross cultural research;
- Developing an international focus for research ideas and dialogue;
- Issues in the area of gender, work and organization;
- Gender and e-management;
- Gender and ICT communication;
- Gender in virtual society;
- Gender and innovative capabilities;
- Gender and social and digital inclusion; and
- Ageing and social and digital inclusion.

## 2.    Biographies

**Jolanta Kowal**



Jolanta Kowal, pHd. of economic sciences, certified Jungian analyst, a tutor and researcher at the Institute of Psychology of Wroclaw University. She is a President of PLAIS (Polish Chapter of Association for Information Systems) and President of PTPA (Polish Association of Analytical Psychology), Individual member of IAAP, a member of scientific associations AIS, PTS and PTPA accredited by IAAP. A researcher and lecturer, Jolanta is the author of over 100 scientific publications and delivers lectures and seminars on methodology of management, applied statistics in socio-economic, psychological and multicultural research. Her interests and research specializations are: organization and management, information technology in organization, methodology, quantitative and qualitative research, analytical psychology, cross-cultural research. Jolanta acted as the conference co-chair and track-chair for many international conferences (ECMLG, CMEP, ICTM AMCIS). She is also a member of editorial board of scientific journals: GRE and PJAP.

**Dag Lindskog**

Dag Lindskog is a doctor in Economics from the University of Stockholm, Sweden. His dissertation is primarily about exchange rate policy, which is tested in econometric models of four of the Nordic countries. He has also published a book on the dollar as well as numerous debates in specialized and the general press. Furthermore, he was a member of the popular Swedish weekly radio program "The Economists' Club" for twenty years. Dag has spent most of his working life in the financial sector in Stockholm, London and Luxembourg. He started his career with SwedBank, moved on to the Swedish insurance company Skandia as Chief Economist and ended with the Norwegian bank DNB. After retirement from DNB, he continues his work as an economist with his own consulting company.

**Helena Lindskog**



Adjunct professor in industrial marketing and industrial economy with a special focus on public procurement at Department of Management and Engineering, Linköping University, Sweden.
Engineer on electronics from Technical University in Warsaw, Bachelor of Arts in languages, comparative religion, history and literature from Stockholm University; long experience from both private (responsible for market introductions and training at Ericsson, as adviser, expert and consultant at HelDag AB) and public sectors (technical director and secretary in governmental commissions), PhD in Technology at Linköping Technical University.
Author of several scientific articles, reports, technical specifications, debates and columns in the Swedish press. Fluent in Polish, Swedish, English, Spanish, Russian and French.

**Ali Reza Afshari**

Ali Reza Afshari is a professor at Islamic Azad University in Iran, and a visiting lecturer in State universities in Iran. He holds Ph.D. on Industrial Engineering (Project Management) from UPM University in Malaysia; long consulting experience from both private and public sectors in Project Management. He has reviewed numerous scientific paper for Springer publisher. He reviewed also papers for more than 10 scientific publishers. His research interests include Fuzzy linguistic decision making, Personnel selection, Delphi method, Project management, and ICT management. He has published in more than 30 journals and conferences including: Journal of Intelligent and Fuzzy Systems (IOS), Arab Journal of Science and Engineering (Springer), Australian Journal of Multi-Disciplinary Engineering, Journal pf Applied Science &amp; Agriculture, KSCE Journal of Civil Engineering (Springer), Journal of Applied Mathematics (Hindawi), among many other journals, as well as in numerous conference proceedings such as IEOM, EMC, and IEEE.

**Pavla Buráňová**

Bc., student at Masaryk university, Brno, Czech Republic

**Yun Kyung Cho**

Yun Kyung Cho is a PhD student in Sociology at University of Wisconsin - Madison, USA: M.S. in Civil & Environmental Engineering, UW-Madison, USA; B.S. in Environmental Science & Engineering, Ewha Woman's University, Seoul, Korea.
Work experience: 5 years of teaching experience in Sociology at UW-Madison, USA; 5 years of research experience in Civil & Environmental Engineering at UW-Madison, USA; 2 years of research experience in National Institute of Environmental Research and Korean Institute of Construction Technology, Seoul, Korea.
Academic/research interests: social networks and organizational cultures for diversity and equity; career trajectory across higher education and workplace; integration and success of women scientists/engineers in academic institutions and industry.

**Bartłomiej Gawin**

Dr inż. Bartlomiej Gawin – Pracownik dydaktyczno-naukowy w Katedrze Informatyki Ekonomicznej Wydziału Zarządzania Uniwersytetu Gdańskiego, Dyrektor Działu IT w firmie SESCOM S.A. Zajmuje się: problematyką zastosowań współczesnych technik oraz narzędzi do projektowania, symulacji i analizy procesów biznesowych i systemów informatycznych, a także efektywnością energetyczną i analityką BI. Autor publikacji naukowych i publicystycznych w języku polskim i angielskim. Autor książki „Systemy informatyczne w zarządzaniu procesami workflow" (PWN 2015), współautor książki „Symulacja procesów biznesowych. Standardy BPMS i BPMN w praktyce" (HELION 2013).

**Saikat Gochhait**

Saikat Gochhait has 1 years of experience: 5 years f teaching experience and 6 years of industrial experience with Tata Group (TRL Krosaki Ref Ltd) and Bajoria Group(IFGL Ref Ltd). Bsc(Physics), PGDCA, MSc-IT, MBA with specialization in Marketing and Ph.d-International Business from Sambalpur University. He has been awarded Doctorial Bursary Award 2010 from Coventry University, UK for the doctoral thesis-Refractory Industries. He has been awarded with Diamond of Belpahar-2013 sponscered by Tata Krosaki Refractories community for excellence as an individual and contribution to the society. He has been awarded with MTC Global award for Best Faculty in Rural Area. Mr.Saikat has contributed extensively in National and International Journals and Conferences and has chaired session in different International and National conference such as IIM-K,IIM-L,IMS-Noida, IMT, XIM-B and Amity University-Jaipur. Phd Thesis has been published in Book printed form by LAP Lambert Academic Publishing, AG & Co KG, 2012 available on (www.ebay.com › Books › Nonfiction).
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**Lobna Hassant**

Lobna Hassan is an Information Systems researcher and PhD candidate at Hanken school of Economics, doing experimental research on gamification design and its influence on employee performance, and two-way government-citizens communications. Her interests also extend to motivational systems, and social networking applications: http://lobnahassan.com

**Samaneh Hooshyar**

Samaneh Hooshyar holds a Master of Clinical Psychology. She worked four years as a psychologist in Ebne sina mental hospital, nutrition clinic, and in a drug rehabilitation clinic, and she have been working in cancer center in Razavi Hospital four two years. She has been working Group therapy and family therapy with addicts and obese people. And at the moment she working with individual counseling and group therapy, family therapy and art therapy with cancer patients. She has published several articles in various magazines.

**Anna Jasińska-Biliczak**

Anna Jasińska-Biliczak, Ph.D. Lawyer, economist, external auditor of ISO-based management systems, mediator, community worker. Expert on small and medium enterprises and on the conditions and trends in the local and regional economic development, with particular focus on sustainable growth and innovation, CSR as well as intellectual property. Boasts many years of experience in the public administration and in the SME sector. Conducts research and publishes articles devoted to the creation and support of SMEs, regional policy, and economic changes in the region. Reviewer in domestic and foreign scientific journals.

At present assistant professor at the Department of Economics, Finances and Regional Research of the Opole University of Technology.

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**Jawameer Kakakhan**

Jawameer Kakakhan born in 1980, raised and lives in Erbil, Kurdistan Region of Iraq.

My undergraduate is in Electrical Engineering. My master's degree is in Business Administration from University of Picardie- Jules Verne, Amiens- France. Following my MSc I entered a PhD program at Krakow University of Economic, Krakow- Poland, where the focus has been on management information system.

I have more than 13 years of working experience, nine of which spent in the Iraq during and post-conflict environments working on, emergencies, relief, recovery, and development issues. Worked with World Health Organization (WHO) and Information Management and Mine Action Programs (iMMAP), in several countries around the world, including DR Congo, Kenya, Pakistan, Armenia, Jordan.

I have worked in global health and disease mitigation. Much of that work has involved spatial analysis, using GIS, as a tool for the identification of disease states and programs for their control. In brief some of my recent achievements includes, but not limited to, establishment of disease Early Warning System in Iraq, after which the same model was transferred and replicated for Libyan Ministry of Health. I have developed and piloted a real-time data transmission model for Polio campaign monitoring in Iraq for the first time, using Survey123 for ArcGIS. I have also used ODK and mobile data collection for Health Resource Availability Mapping (HeRAMS) during the recent crises in Iraq. I have used GIS and Spatial analyst to identify the optimum location for the mobile clinics and hospital in response to the IDP flow.

**Olga A. Kalchenko**

Olga A. Kalchenko is currently an associate professor and researcher at Peter the Great Saint-Petersburg Polytechnic University, Russia. She holds a Ph.D. in Economics. Olga has also studied in Lappeenranta University of Technology, Finland and Northern Institute of Technology Management, Germany. Her research interests are: human capital, innovative projects effectiveness and efficiency evaluation, sustainable development, economic safety. As a researcher and lecturer, Olga is the author of over 12 refereed scientific journal articles, 2 scientific books (monographs) and tutorials. She chaired a session at the 2014 International Congress on Economy, Finance and Business, Japan.

**Joanna Kasza**

Joanna Kasza Absolwentka SGH na kierunkach: MBA (Master of Business Administration) i Zarządzania i Marketingu, oraz Podyplomowych Studiów : „Zarządzania w kulturze" Instytutu Kultury przy Uniwersytecie A. Mickiewicza w Poznaniu; „Dyplomacji kulturalnej" Collegium Civitas we współpracy z Instytutem Adama Mickiewicza, oraz Interdyscyplinarnych Studiów „Sztuka, przestrzeń publiczna, demokracja" SWPS we współpracy z Muzeum Sztuki Nowoczesnej. Aktualnie doktorantka Instytutu Kultury UJ w trakcie pracy doktorskiej na temat przemian w obiegach kultury w ponowoczesnej gospodarce w związku dokonująca się obecnie rewolucji ICT.

Zainteresowania : relacje między kulturą i sztuką a gospodarką, czy w szerszym ujęciu między ekonomią, polityką a społecznym i technologicznym wymiarem i rezultatem tych relacji (podejście konstruktywistyczne przy założeniach: anty-redukcjonizmu i artykulacji relacji miedzy kulturą a ekonomią polityczną - w kontekście współczesnych pytań o relacje miedzy kulturą a ideologią, hegemonią i władzą oraz polityką/ politycznością.

**Anna Kuzio**

PhD..: studied English at Wrocław University, Ph.D. studied English at Adam Mickiewicz University in Poznań. Research interests: intercultural communication, critical discourse analysis, pragmatics, rhetoric, persuasion and manipulation. Assistant Professor at WSZ EDUKACJA in Wrocław (Poland).

**Bianka Lewandowska**

Bianka lewandowska - PhD with a specialization in psychology. She graduated from the Institute of Psychology at the University of Wroclaw. In the years: 1993 - 2003 Bianka worked at the Institute of Economic and Social Sciences University of Technology, and since October 2003, in the Department of Clinical and Health Psychology, Institute of Psychology at the University of Wroclaw. Her professional activities outside the university: to design and conduct workshops and individual counseling psychology in supporting personal development and communication. Current area of her research interest is psychology of the body - the experience of corporeality, identity processes and emotions and somatic health, the possibility of psychological support prevention and treatment of diseases. Research: Determinants of psychological adaptation to chronic illness for example endometriosis.

**Zbigniew Łoś**

Psychologist, PhD in human sciences, works in Institute of Psychology, Faculty of Historical and Pedagogical Sciences at the University of Wrocław. He has developed his own theory assuming that the psychological organisation of human beings consists of four evolutionarily shaped functional layers which may be subject to progressive development throughout four periods of human life. He is engaged in research aiming to falsify this theory. His main publication is "Rozwój psychiczny człowieka w ciągu całego życia" [Life-long psychological development of human beings] (2010, a monograph).

He developed (with Alicja Senejko) theoretical model of attitudes to globalization (MAG). She is a coauthor (with A. Senejko) The World and I Questionnaire (WIQ), which is a measure of this attitudes.

**Juho Mäkiö**

Prof. Dr. Juho Mäkiö joined the Department of Electrical Engineering and Industrial Informatics at the University of Applied Sciences Emden-Leer and became Full Professor of programming in 2013. He received the Doctor degree in Economics from the University of Karlsruhe, Germany, in 2006. From 2006 to 2010 he was first project manager (till 2007) and then department director (2007-2010) in the department of Software Engineering at the research centre of information technology at the University of Karlsruhe (FZI). From 2010 to 2012 he was deputy professor for software engineering and programming in the University Heilbronn at the department of e-Business. From fall 2012 to summer 2013 he was lecturer at the Technical Teacher Collage (TTC), Riadh, KSA. Besides the current position at the University of Applied Sciences Emden-Leer, he is visiting professor at the Polytechnic University of St. Petersburg, Russia. Prof. Mäkiö has participated in leading position in German research projects, e.g. as coordinator of the project "OUTSHORE". He is member of IEEE, ACM and AIS.

**Elena Mäkiö-Marusik**

Elena Mäkiö-Marusik studied applied mathematics at the Yaroslavl State University, Russia. She joined the Department of Electrical Engineering and Industrial Informatics at the University of Applied Sciences Emden/Leer as an external postgraduate student in 2016. Her postgraduate investigation topic concerns new educational approaches in teaching of engineering disciplines. Parallel to her study she works in the ICT management department at the Meyer Ship Yard in Papenburg since 2013. From 2004 to 2013 she worked as software engineer and test manager at Comsoft GmbH in Karlsruhe, Germany. In 2013 she completed her education in adult training at the Academy for scientific education of the University of Heidelberg.

**Alexan Nader**

Nader Alexan is a software engineer from Cairo, Egypt with a strong interest in research within the field of gamification and static code quality analysis for the goal for building better systems to the public. Nader enjoys knowledge exchange and is always happy to work with other researchers in the field of gamification. He is reachable at: alexan.nader@dreidev.com

**Grażyna Paliwoda-Pękosz**



Grażyna Paliwoda-Pękosz is dr hab., assistant professor in the Department of Computer Science at the Cracow University of Economics (Poland). She holds a PhD in economics from the Cracow University of Economics and MSc in Computer Science and Mathematics from the Jagiellonian University of Cracow (Poland). Her current research focuses on Semantic Web technologies with a special attention to ontology similarity measures. She has published a number of articles connected with Semantic Web technologies. Dr. Paliwoda-Pękosz has a few years of industry experience in enterprise software development and implementation.

**Barbora Pánková**

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**Daniel Papla**

Daniel Papla, Ph.D., associate professor, Wrocław University of Economics, Department of Insurance. Scientific and research interests: financial economics, econometrics. Specialization: time series modelling, analysis and forecasting, financial modelling and econometric analysis. Master's thesis on application of the deterministic chaos theory of in economics, doctoral dissertation on efficient market theory and its application on the Polish market. Author of more than 40 publications. He teaches now Analysis of Financial Data on bachelor level studies lecturer.

**Ivana Poledňová**



PhDr. Ivana Poledňová, CSc.
Research methods in psychology, Methodology of Psychology, Psychodiagnostics, Theories of Personality, Psychology of Motivation. In the past eight years the project proposer is working on the Institute for Research on Children, Youth and Family. This institute is part of Psychology Department on the Faculty of Social Studies at Masaryk University in Brno and its main interest is long-term research on children, youth and their families. Research institute is taking part on unique European project (coordinated by the Institute of Child Health University of Bristol, Great Britain) called ELSPAC (The European Longitudinal Study of Pregnancy and Childhood).
The project proposer research activities within the Institute are focused on these areas: vocational plans in adolescence in relation to the self-concept and achievement motivation, career development, cognitive development and professional training. In the year 2009 she was the editor of monograph Sebepojetí dětí a dospívajících v kontextu školy (Self-concept of children and adolescents in the school context), Brno, MU. Several years she cooperates in the research activities of the Institute of Psychology of the University of Wroclaw, Poland. One of the results of this cooperation is her contribution to the polish monograph on aggression Zachowania agresywne dzieci i młodzieży (Aggressive behavior in children and youth), Warsaw, Difin 2013.. As the author of several psychodiagnostic methods she cooperates long term with the Psychodiagnostika Brno publishing.

**Alicja Senejko**



Alicja Senejko has her Dr Hab. from the Institute of Psychology, Wrocław University. Her scientific interests is focus on the two topics.1/Psychological defence and development. She is an author of the Function-action approach to defence activity. Her questionnaire PSPDQ (Psychic and Psychosocial Defences Questionnaire) diagnoses threats and defences among adolescents and adults; 2/ Psychology of globalization. She is a coauthor (with Zbigniew Łoś) The Model of Attitudes toward globalization (Mag) and The World and I Questionnaire (WIQ), which is created to diagnose attitudes toward globalization. Dr hab Alicja Senejko is an author of 3 monographs, and 50st articles. She is a member of PTP (Polish Psychological Association), European Association for Research on Adolescence (EARA), and International Society for the Study of Behavioral Development (ISSBD).

**Rafał Siedlecki**



Rafał Siedlecki, PhD in Economics, assistant professor at the Financial Management Institute at the Wroclaw University of Economics. He teaches corporate finance, financial distress forecasting methods. His research is dealing with forecasting warning signals in companies and the use of the logistic law of growth to determining company's financial cycle of life (as in the economy). In his research he use own forecasting models base on the modified S-curve (log-logistic function proposed by prof. Hellwig and linear-logistic function) and taxonomic methods. He is the author of book "Financial warning signals in company's cycle of life" (in Polish). Warszawa C.H. Beck.

**Ewa Soja**

Ewa Soja is assistant professor in the Department of Demography at the Cracow University of Economics, Poland. She holds a Ph.D. in economics from the Cracow University of Economics. She also holds a Master of Science in Mathematics from Jagiellonian University of Cracow, Poland. Her research interests include socio-economic implications of demographic processes and the labor market in the context of an aging population. She is also interested in the possibilities of using ICT in the context of the problems associated with an aging population.

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Piotr Soja is associate professor in the Department of Computer Science at the Cracow University of Economics (CUE), Poland. He holds a postdoctoral degree (habilitation) and Ph.D. in economics from CUE. He also holds an M.B.A. from the School of Entrepreneurship and Management at CUE in association with the University of Teeside, UK. He has experience in industry as an ERP consultant, system analyst and software developer. His research interests include enterprise systems adoption, ICT for development, and inter-organizational integration. Piotr has published in Enterprise Information Systems, Industrial Management & Data Systems, Information Systems Management, and Information Technology for Development, among many other journals, as well as in numerous conference proceedings such as AMCIS, HICSS, ICEIS, and ISD. He is currently member of the Editorial Board of AIS Transactions on Enterprise Systems, Information Technology for Development and Journal of Accounting and Management Information Systems. He has acted as Program/Organizational Committee member in numerous international conferences, including AMCIS, ECIME, EMCIS, EuroSymposium, and ICTM.

**Ralph Sonntag**

Ralph Sonntag is since 2004 Professor of Marketing, in particular multimedia marketing, at the University of Applied Sciences Dresden. In addition, he is scientific director of an incubator for start-ups at the HTW Dresden. After studying business administration in Würzburg, he worked as a researcher and project manager of the Steinbeis Transfer Center for Business Information Management and the Technical University of Dresden. Subsequently followed by positions at the consulting company Diebold (now Detecon) in the digital business as well as in communication and advertising agencies.

His work and research interests are in the study of Word of Mouth, E- and Social commerce, models of Digital Business, methods of media planning and advertising success research.

**Zdenka Stránská**
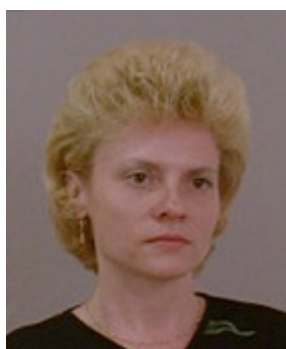
PhDr. Zdenka STRÁNSKÁ, Ph.D. works as an assistant professor at the Department of Psychology of the Faculty of Arts, Masaryk University in Brno. He teaches educational psychology, school psychology, didactics of psychology, psychology for teachers and general psychology. Her research has focused on the issue of motivation for learning, boredom, fear, anxiety and stage fright at school, learning styles of students, school success of pupils, students' creativity, teacher's personality, etc.

**Jarosław Wąsiński**

Lecturer in the College of Management Edukacja; Doctor of economics; Alumnus of The Warsaw School of Economics, Auditor/ Lead Auditor ISO 9000 series QMS and ISO 27 001 (about 500 audits and expert opinions in UE); Trainer; Eleven years of experience in the implementation of management systems such as ISO 9001, ISO 27 001, ISO 22 000, HACCP, BRC, IFS; Originator of technology projects in companies and industrial restructuring.

**Krystyna
Węgłowska-Rzepa**

Krystyna Węgłowska-Rzepa, PhD in psychology, an employee of the Institute of Psychology at the University of Wroclaw, a member of the Polish Association of Analytical Psychology and the trainee on Jungian analyst at the International Association for Analytical Psychology. Beyond scientific and didactic work at the Institute of Psychology UWr, runs a private psychotherapy practice. She participates in many national and international conferences and training related to psychology and the social sciences. Her interests and research focus on personality psychology, the influence of significant events and experiences for the development of individuals in the course of life, psychoanalysis and neuroscience. She has numerous publications, the last of them are (see Publications by University of Wroclaw):

- The "Symob" projective method and its possible applications in the labour market: the basis for the method's construction / Krystyna Węgłowska-Rzepa, Jolanta Kowal // W: Functioning in the workplace: quantitative and qualitative psychological research / ed. by Barbara Mróz. - Warszawa: SCHOLAR Publishing House, 2012;
- Femininity and masculinity in the course of social and mental changes / Krystyna Węgłowska-Rzepa, Jolanta Kowal, Aleksandra Szczepaniak // W: Ona w XXI wieku: interdyscyplinarny obraz kobiety / red. nauk. Magdalena Baranowska-Szczepańska. - Poznań: Instytut Naukowo-Wydawniczy MAIUSCULA, 2011;
- W poszukiwaniu swojego miejsca w życiu: spojrzenie z perspektywy narracyjnej i analitycznej / Krystyna Węgłowska-Rzepa // W: Psychologia narracyjna: tożsamość, dialogowość, pogranicza / red. nauk. Elżbieta Dryll, Anna Cierpka. - Warszawa: Eneteia - Wydaw. Psychologii i Kultury, 2011. - (Seria Akademicka).

**Stanisław Wrycza**

Professor Stanisław Wrycza, University of Gdansk
Founding member of AIS – 1995;
He has been the organizer of the following AIS events:
• Xth European Conference on Information Systems – ECIS 2002
• SIGSAND/PLAIS EuroSymposia - 2007, 2011, 2012, 2013, 2014, 2015
Professor Wrycza is together with the former AIS President
Professor Claudia Loebbecke co-founder of PLAIS in 2006;
Head of Department of Business Informatics at University of Gdansk;
Senior Editor of Information Systems Management Journal (IF=0.35);
Editorial Review Board of Journal of Database Management (IF=2.121);
Advisory Board of Information Systems Journal (IF=1.381);
Editorial Board of Information Systems and e-Business Management (IF=0.605);
President of PLAIS - Polish Chapter of Association for Information Systems;
General Chair of SIGSAND/PLAIS EuroSymposium;
Steering Committee of BIR - International Conference on Business Informatics Research;
ISAHI (Information Systems Academic Heads International) Vice President 2008 – 2010;
University of Gdansk AIS Student Chapter Faculty Advisor;
Honourable Ambassador of Polish Congresses;
President of PLAIS – Polish Chapter of Association for Information Systems;
General Chair of ECIS'2002 – The Xth European Conference on Information Systems in Gdańsk;
General Chair of SIGSAND/PLAIS EuroSymposium.

**Aleksander Wolski**



Doctor of social sciences in sociology, a longtime teacher, promoter. The author of articles on sociology (local community, social communication and public consultation). In the area of academic activity held positions: manager of local division of GWSH, the delegate of the Rector. Currently Dean of GWSH in Żory. It performs social analysis for energy and extractive (cool mine) industries. Practices of personal development. Involved in working with the alcohol addicts. As an expert participant of radio and television. Their professional interests in the field of sociology, combines with the achievements of the Taoist philosophy, spiritual development, and quantum physics.

**Monika Woźniak**



University of Gdańsk

Researcher – PhD assistant professor in the Department of Business Informatics, Faculty of Management

In the current research work focuses on contemporary requirements and expectations of the IT sector, lead the way to transform the IT industry, the critical success factors of projects and the competencies and efficiency of PM.

The author of numerous articles and monographs domestic and foreign, as well as expert, consultant, trainer in the area of innovation in project management.

She is passionate about teamwork preferring an interdisciplinary approach, combining knowledge from different fields with industry practice and personalized approach based tutoring.

Vice President of the Foundation Science in Development, founder the University of Gdansk Tutors Centre, a member of the International Project Management Association (IPMA), Information Systems Audit and Control Association (ISACA), practices Process Oriented Psychology (Process Work).

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# 4. Papers

# Do women perceive their temporal and material resources similarly to men?
# Polish-Swedish comparative studies taking into account the respondents attitudes towards globalization

by

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The paper is aimed at presenting the main results of cross-cultural research, which was directed towards assessment of the influence of gender on the perception of one's own temporal and material resources in the globalized world in which we live and the attitudes towards it. The theoretical basis for the deduced hypotheses are the models of: the time & money resources by H. Lindskog and the attitudes towards globalization by A. Senejko and Z. Łoś. The study involved 675 Poles and Swedes aged 21-80 years (M = 36.42, SD = 14.59), comprising two groups of surveyed: Swedes: N (S) = 300 and Poles (N (P) = 375. In total, the study included 403 women (222 Polish and 181 Swedish) and 272 men (153 Polish and 119 Swedish). Two methods were used for the research.

The questionnaire "Time & Money" authored by Lindskog, Łoś, Senejko and Chmielewska-Łuczak, assesses basic temporal and material resources of respondents. **Material resources** are defined as a sum of: type of employment and income, additional sources of income (leasing of an apartment, scholarship, donations, etc.), standard of housing (size, standard and type of residence) and holidays abroad. **Temporal resources** were assessed as a spare time left at one's disposal after attending to responsibilities and were composed of time for rest and relaxation (sleep, rest, personal hygiene), time for leisure activities (sport, entertainment, hobby, social meetings, etc.) and time for everyday responsibilities (professional, school, family, commuting. As a result we've distinguished two indicators:

1. Material resources = earnings + type of employment + additional income + standard of housing + holidays abroad,
2. Temporal resources = time for rest & relaxation + time for leisure activities - time for everyday responsibilities.

Senejko, Łoś,
Lindskog

Do women perceive their temporal and material resources similarly to men? Polish-Swedish
comparative studies taking into account the respondents attitudes towards globalization.

The second method was the questionnaire "World-I" based on the model of attitudes towards globalization, authored by Senejko and Łoś. KŚ-J assesses the three different attitudes towards globalization: accepting (expressing a positive attitude towards the modern world), critical (emphasizing opposition and concern about the state of the world) and fearful (expressing fears whether one can meet the demands of the present day).

The paper describes the most significant results differentiating the studied groups of Polish and Swedish women as well as Polish and Swedish men from a perspective of the investigated variables. And so, for example; the Polish women have significantly less time than the Polish men, while the difference in this aspect, between Swedish women and men is not significant. In turn, the Swedish women have significantly less material resources than the Swedish men, and between Polish respondents the difference in these resources is not significant. The state of respondents' resources also exhibits correlations with the attitudes towards globalization. The greater material resources the respondents had, both the Poles and the Swedes, the weaker the fearful and critical attitudes they demonstrated, and the stronger the accepting attitude (of especially Polish men) towards globalization. The temporal resources of the surveyed, as it turned out, did not have such a significant correlation with the intensity of their attitudes towards globalization.

# Are we ready for an ageing workforce?
# Learning from difficulties experienced by Polish practitioners during enterprise system adoption and use

by

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Population ageing, a typical phenomenon for developed countries, results in workforce shrinking and ageing. Prior research indicates that as age increases attitudes towards computers tend to be more negative. Nowadays, information and communication technology (ICT) plays a very important role in people's personal life and business experience. With respect to the latter, enterprise systems (ES), which are very complex ICT-related systems supporting the management and integration of the whole company, deserve our special attention. Due to its pervasive nature, ES implementation affects virtually all employees in an organization. Therefore, in light of an ageing workforce, it is essential to investigate the role of employee age in the process of ES adoption and use. The current study focuses on difficulties experiences by various stakeholders during ES adoption and use. On the basis of empirical data gathered from Polish practitioners, based on perceived problems and problem causes, and following grounded theory approach, the taxonomy of difficulties has been elaborated. Next, an analysis into the differences in difficulties perception among three employees' age groups was conducted. The authors followed the most frequently mentioned in the demographic body of literature division into the young (less than 35), the middle-aged (between 35 and 50), and the older (50+) employees. The age-based analysis suggests that the young employees focus more on technical issues whereas older employees tend to perceive problems from a broader perspective, reporting more general, organizational problems while experiencing also technical problems. The study's results give new insight into ES implementation process and could help managers to fully reap the benefits from diversified workforce.

**Keywords:** Enterprise systems, adoption, problems, labor force age, ageing, Poland.

# Business competencies as an innovation capability of IT users in Poland and Germany. Experimental study

by

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The aim of the paper is to investigate the socio-economic aspects of human capital, especially the innovative potential of IT users in regional small and medium-sized enterprises (SMEs), which are crucial for economic growth in Poland and Germany. Experimental studies will be carried out online using the author's research tools (diagnostic tests). Results and effects of the study can contribute to economic growth in both countries, including through a better mutual cross-border economic and socio-cultural cooperation. These objectives we intend to achieve on the one hand through virtual access to lifelong learning and diagnosis of employees' innovation potential in the business competencies, in relation to information and communication technologies (ICT) and socio-demographic variables. The results of the study will be applied for preparing the project of virtual marketplace that will serve also as a crowdsourcing platform, as well as database and directory for large companies and large potential customers in Poland and Germany, the search for professional services related to expert opinions, reviews, skills, competencies (practical aspect, market, business). The virtual market is to connect SMEs and IT users in Poland and Germany, for better cooperation, exchange of knowledge and professional experience. The novelty of the project is the ability to simultaneously connect three aspects – research, teaching and practical-economic for cooperation development and economic growth in both countries.

**Keywords:** business competencies, an innovation capability, IT users, Poland, Germany, Experimental study.

# Flexibilizing education

by

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## ABSTRACT

A Flipped Classroom arrangement is part of a recent e-learning movement in the virtual classroom. With a sensible mix of multimedia tools promoting meaningful learning by avoiding content consumption in face-to-face time and instead offering said content beforehand using various sources the Flipped Classroom is good method to offer higher flexibility and enhancement of self-study in tertiary education.

We created a didactical concept to satisfy the increasing need for flexibility. We analyzed the focus group and created a detailed concept for a flipped classroom arrangement. At the beginning we use a survey to get to know the target group, their qualifications, media usage and numbers. Interviews while the event indicated current trend and emotions among the participants. A detailed survey after the event offered interesting insights concerning the success. Based on the evaluation we formed a list of practical experience.

The Flipped Classroom Method is limited to small groups. Our results show only a little insight to the success of this method. There is no pretension for representativity.

This project achieves two outcomes. Firstly, an independent scalable framework, which can be adapted to different learners' and teachers' needs as well as different contents and number of students not only in part-time situations but in distant learning and regular courses as well. We use several IT-based instruments to support the knowledge and the communication processes between the teachers to the students and the students among themselves. Secondly, the evaluation which was interpreted and summarized in a guideline as well as patterns.

To gain learning success for part time students, the didactical design follows a more flexible and time saving way as just the connection of blended learning with the flipped classroom method. To follow the requirements, we include open consultations (for individual learner support), keeping social effects by collaboration and flexibilize assessments by the option of recording presentations and discuss topics in the face-to-face phases.

**Keywords**: Flipped Classroom, higher education, ICT, inverted classroom, e-learning, part-time students

# Session:

# Communication in Education and Management

Session Co-Chairs:

**Ralph Sonntag**, Dresden University of Applied Sciences, Germany

**Anna Kuzio**, University of Zielona Góra, Poland

# Human performance technology in education

by

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**ABSTRACT**

Learning and teaching is a human endeavor being practiced from the days of Stone Age. Man passed on information through pictorial forms in olden days which got developed to hyper text during these days of digital era and has transformed the entire educational scenario. Education involves mankind, materials, and methodology engaging technology and techniques. Having defined curriculum as course of study programme that builds the capacity of the learners within and beyond the four walls of learning to exhibit and develop those skills that are needed for the benefit of one's self and the society for an enriched life style that promote peace and prosperity continuously, the author believes that education must be embedded with Human Performance Technology (HPT) for improved standards to meet the global challenges. HPT is a Performance Improving Strategy involving humans as individual and in groups, their activities in measurable outcome, the technology and techniques involved in skilled performances. Media psychology plays a significant role in educational sectors. Therefore HPT needs to be systematic, systemic, and result oriented in line with the Vision and Mission of the organization. This involves a set of methods, procedures, human resources and strategies for solving problems and realising opportunities related to the students and staff. It has to be integrated with Performance analysis, Cause analysis and selection of intervention programme which demands filling the gaps in Content Knowledge, Pedagogical Knowledge, Technological knowledge, and knowledge on Psychological and Sociological aspects. It stresses a rigorous analysis of requirements at the societal, organizational process and individual levels as appropriate to identify the causes for performance gaps, provide appropriate interventions to improve and sustain performance of high standards, and finally to evaluate the results against the requirements. Therefore it is a systematic process involving Instructional technology, Organizational development, Motivation and feedback, Human factors engineering, and Collaborative efforts. The present paper Human Performance Technology (HPT) in Education

provides a HPT Model for better performance of the Organizations for global competence in the light of the performance technology exercised by the Business organization.

**Keywords** : HPT, Education, standard, organization, global, and Excellence.

# INTRODUCTION

Human Performance Technology is a field of study related to process improvement methodologies. It is a systematic approach meant to analyse the existing organizational environment in micro and macro levels for improving productivity and competence, using a set of methods, procedures, and strategies for solving issues and problems. It helps the organizations to realize the opportunities related to the performance of people. More specific, it is a process of selection, analysis, design, development, implementation, and evaluation of programmes that cost-effectively influence human behavior and accomplishment. It is a systematic combination of three fundamental processes: performance analysis, cause analysis, and intervention selection, and can be applied to individuals, small groups, and large organizations. HPT must be capable of describing the current state, the projected future state, and the rationale or business case for action or non-action. Competitors are the main drivers of challenges and changes in performance. Performance management can be viewed as a complex, time consuming task that require a tremendous effort in given resource constraints. A study was made to identify the highest potential for improvement choosing from "Process improvements" (faster reporting, shorter plan-ning cycles, fast close), "Resource optimizations" (reducing effort, cost, resources), "Better output" (more accurate reporting, user friendliness) or "Process runs just fine". The study shows that improving and integrating performance management processes is seen as a business priority with a high level of expected benefits (BARC, 2009).

# THE PHILOSOPHY OF HPT

Production is not the application of tools to materials but the application of logic to work – Peter Drucker. Production system is a system whose function is to convert a set of inputs into a set of designed output (P. Saravanavel & S. Sumathi, 2010). The HPT process begins with a comparison of the present and the desired performance of individual and organization to identify the performance gap. A cause analysis is done to determine the impact of the work environment on performance. Here the work environment include the conducive working conditions, proper wages, and the resources to influence the people by motivation, skills

development, and commitment through eradicating gaps in every stage for better performance. Once the performance gap and the causes have been determined, appropriate interventions are designed and executed. These may include measurement and feedback systems, new tools and equipment, compensation and reward systems, selection and placement of employees, and training and development.

Fredric.W.Taylor states on the outcome of any organization as "maximum prosperity for the employer and employee means not only large dividends for the organization but the development of every branch of the business to its highest state of excellence, so that the prosperity may be permanent". HPT is used in Business and Corporate sectors for better performance with improved skills. The prime objective of HPT is to focus on result which is the vision and goal factors of an organization. The end product, that is the outcome, should be qualitative and efficient without any compromise better than the earlier product (N. Bernard, 2007). Hence HPT has to make sure of those knowledge and skills that are required among the people to produce high quality results.

To achieve this, HPT takes a systems approach on all the sectors and complexities of functionalities of the organization. As a result, it analyses the organizational process and issues from the end result through the perspectives of individuals, group, departmental and the whole organization. It identifies the intermediate goals and checks for their efficacy in line with the goals and improves the quality. This helps the administrators to understand the stages in the accomplishment of the work, assess the efficiency, and redress any discrepancy. Also it identifies areas of coordination and collaboration within and outside the organization. Equal concern is rendered for technology for immediate communication and effective automation of job requirements.

It is systematic in analyzing every action and its result, and finds the causes and effectiveness for further and future actions. This helps the organization to eradicate the lacking factors, introduce the required knowledge and skills and enhance the needed performances. It helps to make a detailed job task analysis to avoid unnecessary job segments. It helps to eradicate wastage of resources like human efforts, money, materials, workmanship, time, and dignity. HPT also focus on evaluation for sustenance of the produce and products required.

Thus HPT is based on the assumption that human performance is lawful, drawing principles from many fields including psychology and engineering. It is empirical, using

observations and experiments to inform decision making, result oriented, producing measurable and cost effective changes in performance (Chyung, 2008).

## HPT IN EDUCATIONAL INSTITUTIONS

Many HPT models have been introduced to find what is prevailing, the causes for good and bad performances and the ways of improving for better results. In the light of the HPT Model (ISPI, 2012), a Performance Model is designed for Educational Institution.

Educational management is a complex human enterprise in which different resources are brought together and made available to achieve and to accomplish the desire and expected goals of the Institution. It is fundamentally a social organisation where inter human relationships must play a major role. For success of educational management, there must be adequate freedom and flexibility on the one hand and necessary discipline and decorum on the other hand in the educational institution. Education is expected to provide society with human resources which have specialized knowledge, attitudes, work ethics, social, moral & political values and skills so as to sustain and enhance the expected development of the nation (Figure.2).

Learning and teaching is a human endeavor being practiced from the days of Stone Age. Man passed on information through pictorial forms in olden days which got developed to hyper text during these days of digital era and has transformed the entire educational scenario. As the human race developed quantitatively, there came high demand for enriched life style and competency in all the fields including educational institutions.

The *programme of study*, keeps on developing from the trivium of the medieval period. To bring in quality among the different educational institutions, the planning of *what to provide?* and *how to provide?* come up to exist. And thus, the idea of *curriculum*, the Greek word which means "race course" was aptly worded to frame the meaning for the "programme of study". The understanding of "curriculum" gets altered over the years with various interpretations, meaning, emphasis, and approaches. Since the inception of the schooling systems, the word "curriculum" often referred to the formal academic programme provided in the schools and colleges namely the educational institutions. Though knowledge is human construct which evolve continuously through individual's experiences, very often, the formal learning process is associated with formal schooling systems. However, knowledge is recognized only when it exhibited in application and transfer of knowledge in appropriate situation is considered as the skill of an individual. Education has to empower the learners with

intellectual, physical, psychological, sociological, and moral values. Education is the only industry in which the input are the human at large, processing is done by human and the output is the human with modified behavior of high caliber in knowledge and skill who will be worthy citizens of any nation (**Figure 1**).

### Institutional functions
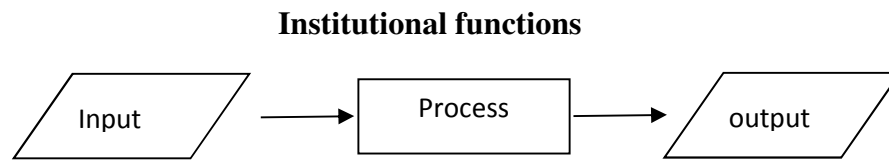


**Figure 1**

Hence educational curriculum must be carefully planned, meticulously organized, and skillfully disseminated to enrich mankind keeping in view of the societal needs. In the perspectives of the author, curriculum is defined as *course of study programme that builds the capacity of the learners within and beyond the four walls of learning to exhibit and develop those skills that are needed for the benefit of one's self and the society for an enriched life style that promote peace and prosperity continuously* (A. Thelma Rani, 2014).

Hence Educational Institutions, having stated the *Vision* for the Institution must continually update their mission and policy strategies to meet the societal requirements in line with their vision. Educational Institutions involve men, material and methodologies in order to produce meaningful, worthy and productive citizens who are intellectually powerful and emotionally matured to support themselves and the society to lead the nation for global standards (**Figure 2**). Hence the Institutions must have a systematic and systemic process and progress foreseeing the future developments in the fast growing world of science and technology. Besides, human efforts are ever growing and they are not satisfied with their present state of physical and psychological constituents. Also there exist greater demands for their psychological needs in varied dimensions. Educational institutions must have to streamline its curriculum and transactional strategies to satisfy these needs of the students. To address the challenges, UNESCO helps nations to launch project to build capacity of higher education institutions for blended learning to enhance student engagement and outcomes. It aims to develop a toolkit with self-assessment rubrics and hands-on resources that supports higher education institutions to sustain and scale up innovative blended learning practices.

School, Colleges, and Universities are the areas with multilingual and multi cultural people. Hence accommodation and peace keeping are the most wanted attributes of students. Institutions have social responsibilities to imbibe in students the acceptable human values.

Unlike the other industries, it is challenging for HPT to meet the ever growing intellectual, psychological and personalized needs of the institutional members. Yet, HPT is inevitable for the institutions to have potential excellence, Constructivism, progressivism, and sustenance for global challenges with competency.

**Educational Influence on the Society**
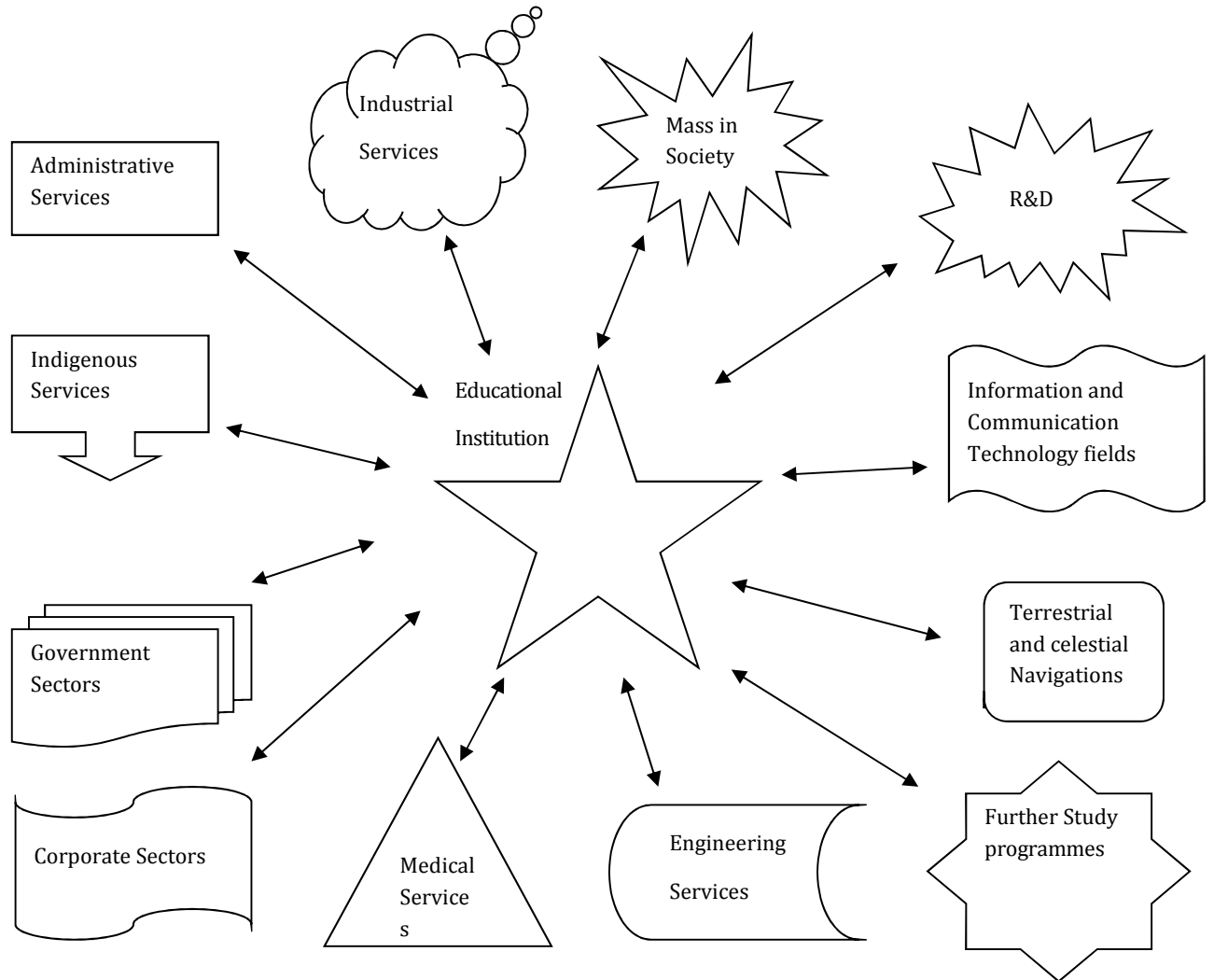


**Figure 2.**

Though many HPT models have been documented in the past, the present paper aims to design a HPT model for Educational Institution (**Figure.3**).

**HPT Model for Educational Institution**



| Organisational Analysis | | | |
|---|---|---|---|
| Organisational Analysis of Vision, Mission, Goals, Policies, strategies | Process — Organisational culture, Curriculum Resources, | Actual Performance | Socially Needed and Acceptable Performance |
| Desired Performance | | | |

**Need Analysis**

| Environment | Progressive | In-service training | Warrant for wards |
|---|---|---|---|
| -Policy | -Administrative process | -Official operations | -Library resources |
| -Strategy | -Curricular transaction | -Curriculum updating | -Updated technology |
| -Curriculum | -Co Curricular activities | -Faculty enrichment | -Conducive learning environment |
| | -Collaborative activities | -Faculty exchange programme | -Collaborative assignments |
| | | -Appreciation and | -Inter Institutional events |
| | | | -National & International |

**Evaluation**

| Environment | Functional strategy | In-service training | Warrant for wards |
|---|---|---|---|
| -Policy to include | -Liaison between government & Organisation | -Credibility of in-service providers and programmes for faculty and workers | -Library resources |
| -New Strategy | -Income and expenditure | -Usability of in-service training and affirmation | -Updated technology |
| -Curriculum added | -Effective usage of resources | -Suitability of training for new staff | -Conducive learning environment |
| -Resources sought | -Suitability and credibility of -- -Curricular and co curricular practices - bench marking | -Alignment programme on societal needs | -Collaborative assignments |
| -Personnel recruited | -Efficacy and Essential | | -Inter Institutional events |
| -Infrastructure suitable | -Collaborative activities | | -National & International forums |

**Figure 3**

Every Educational Institution has its own *vision*. To accomplish the vision, mission, policies and strategies are framed to proceed towards the goal, accelerating growth. Vision always expects certain performance from the output ie from the outgoing students which are considered as *Desired Performance*. Based on the vision and the set mission, policies, and strategies, curriculum design and curriculum transaction are carried for Academic skills. Non academic official functionalities help in the ongoing process of curricular transaction. These activities are experienced by humans namely students, faculty and administrative staff of the organization. Thus psychological issues get involved in the making of the organizational performances. Hence the organizational process must make balanced procedures involving people and behavioral concepts at the end performance. Since Educational Institutions involve people at large, students psychological issues and staff's psychological needs must be addressed to have better learning teaching process. Evaluation is the end factor to assess the overall performance of the students. The skills and behavior of the outgoing students is the *Actual Performance* of the students. Based on the course curriculum and educational transaction, the sociological and technological thrust expects certain performance from those students by the end of the course, which is known as *Needed Performance*. If the *Actual performance* exhibited by the students could match the *Needed Performance,* then there will be no need of HPT. Any discrepancy invokes the application of HPT which focuses on *need analysis* and guide programmes to address them.

When applied, HPT analyses the Institutional vision, mission, policies, strategic plans employed to have successful process involving students, staff, infrastructure, resources, and the evaluation procedures that mould the students as worthy society in line with the societal, national and global demands. It studies the educational curriculum in the light of the vision and the Socio and technological issues, the performances desired, experienced and needed. It analyses the gap (G) between each and every section and functions of the institution, has sensitivity to the needs and accordingly design intervention programmes like in-service training for Faculty enhancement and students' capacity building programmes. Bench marking and best practices are sought, in service and refresher courses are framed and evaluation measures are streamlined. Teaching and non teaching staff must be recognized for their performance. Any education institution ought to have foreseeing ability for future growth for curriculum renewal. This demands vigilant outlook on the scientific and technological development, individual and media psychology (usage of social media), constitutional law and governmental policy on Education, institutional potentiality and the mobilizing capacity for financial resources and

collaborative concern around the institutions and across the nations. As a result, institutions will be able to make self study, analysis of the gaps in every section and functions of the institution and find a solution for the problems if encountered. HPT in Educational institutions also points out the social values to be imbibed in the students and staff for a healthy and peaceful society during these days of societal chaos due to racism. Further it can illuminate the unidentified areas for progress and research in academics.

## CONCLUSION

HPT helps Educational Institutions to make changes, meet the challenges confidently, and precisely device schemes for sustenance of the credibility achieved. The HPT model designed for Educational institutions seems to be both functional and logical in analyzing and addressing the issues of the institutional performance problems. Identifying the appropriate needs according to the Institutional practices will help build better performance using the HPT model. The challenge is to have focus on Performance of the Personnel in general, and particular on the outgoing students for global competition.

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# The role of human capital in aspects of innovations for sustainable socio-economic development

by

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## ABSTRACT

Due to the progress in information and communication technologies (ICTs), globalisation and knowledge-intensification, human capital has become essential for productivity, competitiveness and sustainable socio-economic development. In the globalised world economy ICTs affect socio-economic development of countries through innovations. The "Club of Rome" founder Aurelio Peccei wrote in "The Human Quality" (1977) that world could be presented by interrelated but sufficiently stable elements: Nature, Man, Society, and science-based Technique. Today, sustainable socio-economic development can be defined wider by: Nature, Man, Society, Technology, Economy and Infrastructure. The author's model of sustainable socio-economic development is presented in the paper. Classification of indicators, taken from statistical data books (Russian Statistical Yearbook, Eurostat, IRI, R&D Magazine, International Monetary Fund, World Bank, CIA Factbook, OECD), according to the elements of a complex system of sustainable socio-economic development is proposed in the paper. Since innovations are a key mechanism for the concept of sustainable socio-economic development in the globalised world economy, the need for innovative development of all elements of the proposed integrated system is required.

**Keywords:** Sustainable socio-economic development, information and communication technologies, human capital, knowledge economy, globalised world economy, innovations, elements of a complex system.

## INTRODUCTION

The "Club of Rome" founder Aurelio Peccei stated in "The Human Quality" (1977) that the World could be presented by interrelated but sufficiently stable elements: Nature, Man,

Society, and science-based Technique. In "The Information Society as Postindustrial Society" (1981), Y. Masuda brought up the following concept: new information and communication technologies would lead to serious social changes in society. He also stated that the driving force for development would be the production of new knowledge and information (Okorokov and Kalchenko, 2015). The knowledge economy increasingly relies on the diffusion and use of knowledge, as well as its creation (Houghton and Sheehan, 2000). ICTs investments are complementary with investment in human resources and skills (Soete, 1997). Several knowledge management scholars have expected that the next generation of research will be characterized by an interest in the complicated, complex and chaotic nature of knowledge, management of risk and uncertainty, as well as capabilities for the creation of new knowledge and innovations (Pöyhönen and Blomqvist, 2006).

The goal if this paper is to show the relationship between human capital in aspects of innovations and sustainable socio-economic development on the basis of critical literature review and initial qualitative research. This paper is part of a large research project that examines different aspects of innovations for sustainable socio-economic development.

## LITERATURE REVIEW

The main selection criteria for the theories were a metasearch of literature by different combinations of keywords: *ICTs, knowledge economy, human capital, innovations*; and then separate search for *sustainable development (SD)* and *sustainable socio-economic development*.

**Human capital.** *Education* is to be considered as a key agent of development, either as a way of developing *human capacity*, increasing the skilled workforce for modernisation, or as a matter of personal freedom, *developing capability and empowerment* (Alam, 2009). Hallak (1990) argues that education is also linked to human resources development and that this has *an impact on more than just economic growth, but also an impact on the wider development of individuals and societies.* Participation in social, political and cultural activities and improvements in health as education goals are equally important. According to Fagerlind and Saha (1989), the concept of "human capital" suggests that education and training raises the productivity of workers and increases their earnings over their lifetime. If a new machine (man-made) replaces skilled workers, this may be an effective substitution regarding production and value creation, but in terms of resource consumption (environmental), income generation (social) and skills training (human), the outcome is definitively different, unless all impacts

were reduced to a measurement in monetary terms. *Investing in human capital* thus not only means offering education, but as well combating poverty and unemployment, giving people the opportunity not only to learn, but to apply their skills. It furthermore demands valuing experience (an important aspect given the demographic development) and skills on all levels, promoting self-esteem and permitting self-determination (Spangenberg, 2001). Investing in better education and lifelong learning is of course central to cultural change and shifting demand towards the use of more human capital (Ashford and Hall, 2011). Consciousness, knowledge and skills are *essential human capacities in the process of SD*. Education is one of the key factors in building these capacities (Thompson et al, 2001). *Universities*, the traditional providers of human resources and knowledge, are now *critical socio-economic development actors*. The institutional spheres still perform their traditional functions but increasingly assume the task of advancing innovation and development. *Sustainable knowledge-based development* is the objective of all societies in an *interdependent era characterized by resource constriction and efflorescence of science and technology* (Dzisah and Etzkowitz, 2008). The production of useful knowledge (Robinson, 1993) is what SD education must address (Dale and Newman 2005). The most fundamental resource in the modern economy is knowledge and, accordingly, the most important process is learning (Lundvall, 2010). Human capital is necessary as a basic input to all activities within the innovation system. For a specific technology, the allocation of sufficient resources is necessary to make knowledge production possible. R&D and knowledge development are prerequisites within the innovation system (Hekkert et al., 2007).

**ICTs.** ICTs are a very fast growing new technological area. ICTs, by their performance and potential, offer numerous options to drive SD. Literature provides many examples of initiatives to make the ICTs engine drive SD: improve ICTs across the 4C dimensions (computing, connectivity, content, (human) capacity); success of ICTs for SD requires integration, scalability, and sustainability; ICTs for SD must become a recognized and funded enterprise (Alam, 2009). Information systems research can make an important contribution to knowledge at the nexus of information, organizations, and the natural environment; to the development of innovative environmental strategies; to the creation and evaluation of systems that break new ground in environmental responsibility; and, ultimately, to the improvement of the natural environment (Melville, 2010).

**Innovations.** Literature provides many examples of human's necessity to innovate for survival. Technical ingenuity creates new technology, social ingenuity reforms old institutions and social arrangements into new ones (Homer-Dixon, 2000). Innovations are not predictable

and can happen at any time. *Innovation is critical to human health and welfare* (Newman, 2005). *Innovation is a key determinant for long term economic growth and development.* Increasing the innovation speed at a national level is a highly complicated process, yet influencing the innovation direction is even harder (Hekkert et al., 2007). Christensen argues that *both sustaining and disrupting innovation can be incremental, moderate, or radical* (Christensen, 1997). Unfortunately, the term 'radical' in the literature is used in these two different ways and is a source of confusion (Ashford and Hall, 2011). Many sustainability benefits may be obtained immediately through the use of currently available technologies. In the longer run, however, sustainability requires *transitions involving system innovation* (Kemp, Parto and Gibson, 2005). *System innovation* in the socio-technical realm constitutes change beyond the level of the technical components. System innovation requires transition management with elements of planning (Kemp and Loorbach, 2003). *Transition management* is a process approach directing innovation towards SD. A crucial aspect of transition management is that innovation is no longer driven by the past, but attracted by the future (Vollenbroek, 2002). Structural transformations or transitions require system innovations: organisation-exceeding, qualitative innovations, which are realised by a variety of participants within the system and which fundamentally change both the structure of the system and the relation between the participants (Weaver et al., 2000). In order to make technological change sustainable, technical change alone is not sufficient. On the one hand, technologies use resources and impose environmental stress. On the other hand, technologies can also lead to a more efficient use of resources, less stress on the environment and even cleaning of the environment (Hekkert et al., 2007). Sustainable innovation or eco-innovation has been broadly defined as the process of developing new ideas, behaviour, products and processes that contribute to a reduction in environmental burdens or to ecologically specified sustainability targets (Rennings, 2000). It is clear that *more knowledge is needed* about what characterizes and separates incremental and radical–architectural eco-innovation, in order to begin assessing the challenges ahead, and to create a realistic vision for how to eco-innovate (Hellstrom, 2007). *Policies to initiate innovation processes for SD* should recognise a double approach: *top–down and bottom–up* (Jansen, 2003).

The notion of innovations must be a key issue of sustainability. Alternative (or complementary) context of innovations shifts the weight from economic efficiency and short-term optimality to conditions fostering adaptive flexibility and long-term stability (Rammel, 2003). SD requires stimulating *revolutionary technological innovation* through environmental,

health, safety, economic, and labor market regulation (Ashford and Hall, 2011). A technology, or the knowledge it embodies, is hardly ever embedded in just the institutional infrastructure of a single nation or region, since–especially in modern society - *the relevant knowledge base for most technologies originates from various geographical areas all over the world* (Hekkert et al., 2007).

**Sustainable socio-economic development.** SD is one of the most important global challenges of the 21st century. The challenge of SD is now recognised worldwide (Jansen, 2003). The truth of Muir's famous dictum, "Everything is connected to everything else in the universe", is becoming ever more obvious as *economies merge into global interdependencies*, and for the first time in human history, our technologies and the ways people use them have the capacity to transform the biosphere itself (Alam, 2009).

Since being defined by the Brundtland Commission as behavior that "meets the needs of the present without compromising the ability of future generations to meet their own needs" (Brundtland, 1987), the concept of SD has continued to evolve. Economic strategies, such as reviving growth and conserving and enhancing the resource base, conflict with those which foster ecologically SD. Further, *strategies must be long term, such as decades, but action must occur now*. To achieve SD, ecologists, economists, and other social scientists must work together (Munn, 1989). There are numerous definitions of SD. "Fulfilling peoples needs of the present and future generations" requires actions that are of the short, medium and long term (Jansen, 2003). The critical global environmental problems resulted from both the *South's enormous poverty* and the *North's unsustainable consumption and production* (Kemp and Martens, 2007). There are moral and procedural challenges for defining the roles of science-based knowledge and innovations for poverty reduction, for governance of technological and environmental risks, for sustainable ecosystems management, and for effective communication of scientific information to achieve SD goals (Funtowicz, Ravetz and O'Connor, 1998). Our society is increasingly facing persistent problems, which cannot be solved by current policies based on traditional approaches alone (Loorbach and Rotmans, 2006). The persistent problems are complex, unstructured, involve many stakeholders, are surrounded by fundamental uncertainties, and are deeply rooted in our societal structures and institutions (Dirven et al., 2002). SD must be dynamic. It must be an ongoing process, not a goal. Numerous recent publications support the shift from a goal-oriented to a process-oriented SD. *SD models must be flexible enough* (Newman, 2005). *There always will be 'problems' and needs for change* (Rammel and van den Bergh, 2003; Sartorius, 2003). Sustainability is not a fixed ideal, but an

evolutionary process of improving the management of systems, through improved understanding and knowledge. Analogous to Darwin's species evolution, the process is non-deterministic with the end point not known in advance (Cary, 1998). Kemp et al. argue that *sustainability* is best viewed as a *socially instituted process* of adaptive change in which *innovation is a necessary element*. Pursuit of sustainability is a long-term, indeed never-ending process. A great deal of effort has already gone into the *identification and elaboration of sustainability indicators*. Taken as a set, these tools could provide a *well integrated, reasonably clear and yet flexible and locally adjustable foundation for sustainability-focused decision-making* (Kemp, Parto and Gibson, 2005). SD challenges societies to work in an interactive and cooperative way, instead of in categories defined by selfinterest. Science and technology (S&T) can take a more active role in that process (Alam, 2009).

On a national scale, experiences have been gained in general integrated foresight programs for economic development with time scales up to about 15 years. These programs teach how to organise co-operation between private parties, public parties and science (Jansen, 2003). The 'Sustainable Technology Development' program, launched by five Dutch ministries January 1993 - December 1997, produced a guiding manual with recommendations on *how to implement new research directions, knowledge and technologies based on integration of innovations in technology, culture and structure*. Systematic search and problem definition in long-term developments may deliver new and urgent challenges in research, innovation and development (Jansen et al., 1998). The innovation experiments suggest that: innovation processes scoping the development of technology for a sustainable (long-term) future can be initiated and managed (Jansen, 2003). A positive example is an adoption of *transition management by Dutch policy* in 2001 when five ministries started developing transition policies for mobility, agriculture, energy-supply and biodiversity. Transition management not only makes good sense but is also the only possible (and do-able) way of achieving true sustainability benefits in the long-term while maintaining short-term diversity (Loorbach and Rotmans, 2006). *Transition management* helps to work towards a sustainability transition even when no one knows what a sustainable society would actually look like and the very idea of achieving sustainability may be illusory (O'Riordan, 1996). It is not a way to manage cultural change, but rather *an approach for fostering innovation*, *especially system innovation* (Kemp and Martens, 2007).

*Triple helix interaction (university-industry-government)* represents the heart of *knowledge-based development* with circulation among and within the spheres acting as the

arteries that stimulates ideas and policies across from one point to another. This makes it possible to stimulate knowledge-based strategy and speed the rate of socio-economic development by enhancing *the free flow of people, ideas and innovations*, the core elements of a triple helix circulatory system. Interaction among university, industry and government as relatively independent, yet interdependent, institutional spheres is *the key to improving the conditions for innovation and SD in a knowledge-based society* (Dzisah and Etzkowitz, 2008).


## METHODOLOGY

The presented research study was aimed to find answers to the following research questions (RQs):

RQ1: What is the role of human capital in aspects of innovations for sustainable socio-economic development?

RQ2: By what elements can be defined sustainable socio-economic development today?

RQ3: How indicators can be classified according to the elements of a complex system of sustainable socio-economic development?

RQ4: How partial indicators can be aggregated into an integrated indicator of sustainable socio-economic development?


## RESEARCH AND DISCUSSION

Today, sustainable socio-economic development can be defined by: Nature, Man, Society, Technology, Economy and Infrastructure (Figure 1). Classification of indicators, taken from statistical data books (Russian Statistical Yearbook, Eurostat, IRI, R&D Magazine, International Monetary Fund, World Bank, CIA Factbook, OECD), according to the elements of a complex system of sustainable socio-economic development can be presented as follows:

**Nature** (*ecological footprint and biocapacity*):

1) availability of natural resources reserves (renewable and traditional, real and potential) in terms of production,%;
2) grain harvest, tonnes;
3) emissions of pollutants into the air from stationary and mobile sources, tonnes;
4) water intake from natural water sources for use, m3;

5) discharge of polluted wastewater, m3;

6) volume of production and consumption waste, including dangerous to the environment and human, tonnes;

7) use and disposal of waste production and consumption, tonnes.

**Man** (*access to education, health, safety*):

1) average life expectancy (men and women), years;

2) total fertility rate (births per woman);

3) floor area per person, square metres;

4) average per capita income to subsistence minimum, times;

5) coverage of youth secondary vocational and higher education programmes, %;

6) number of receiving health care, people;

7) number of committed crimes, thousands.

**Society:**

1) population with incomes below the subsistence minimum, %;

2) average income of the richest 10% to the poorest 10%, times;

3) unemployment rate according to ILO methodology,%;

4) health, education and culture costs, US dollars;

5) old-age support ratio, %;

6) benefit and social assistance payments, US dollars;

7) proportion of working age population, %.

**Technology** (*level, tenor of technology*):

1) total expenditures on R&D, US dollars;

2) equipment goods, % total goods ;

3) innovative products, % total products;

4) export and import of ICT goods, US dollars;

5) developed advanced manufacturing technologies, units;

6) patent applications, units;

7) duration of advanced manufacturing technology use, years.

**Economy** (*GDP purchasing power parity level*):

1) GDP growth (annual), %;

2) investments in factors of production, US dollars;

3) annual inflation rate, %;

4) export and import, US dollars;

5) government deficit/surplus, US dollars;

6) loans, deposits and other funds extended to organizations, individuals and credit institutions, US dollars;

7) expenses and savings, US dollars.
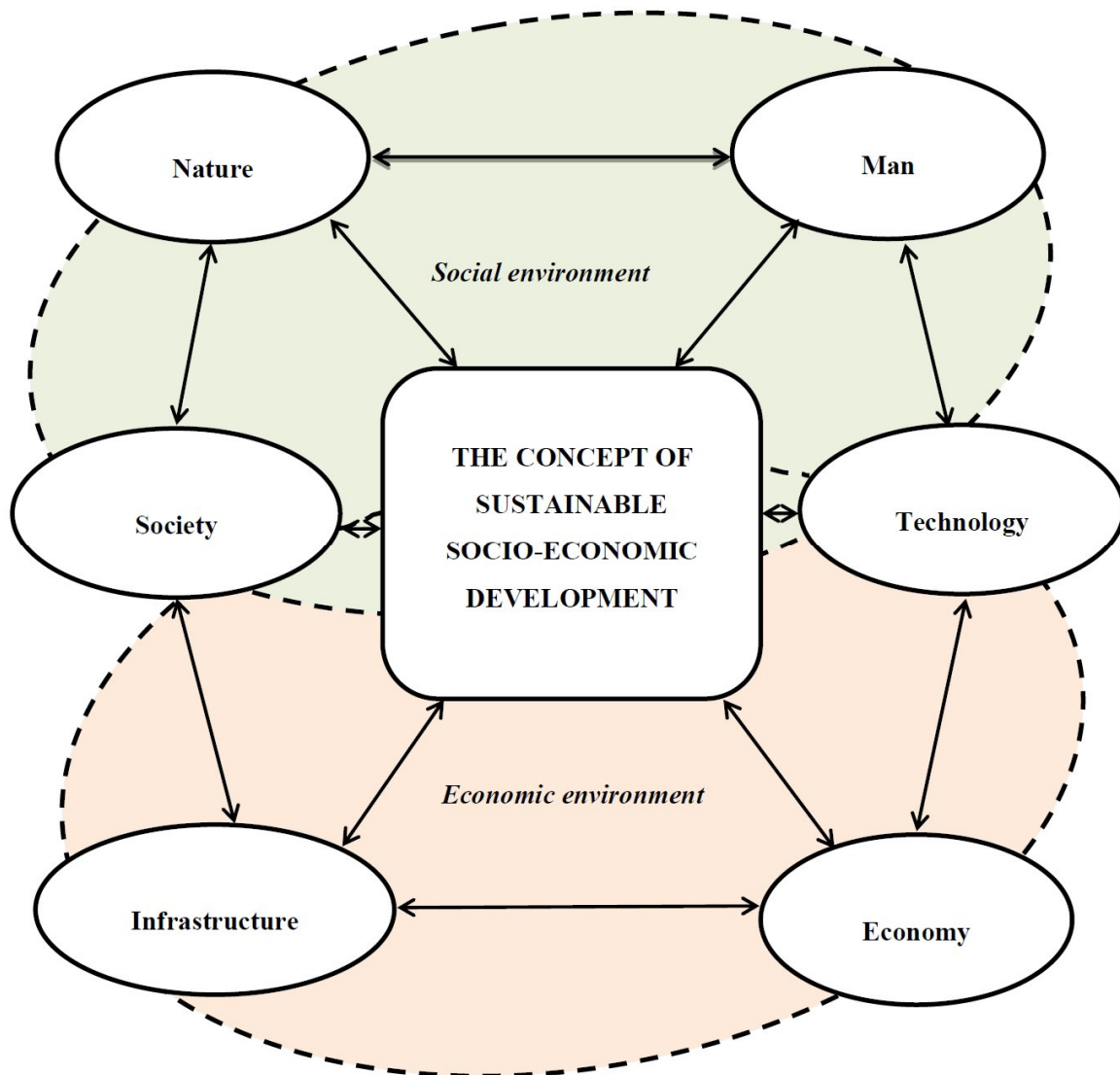


Figure 1. The model of sustainable socio-economic development

**Infrastructure** (*development and extension*):

1) network length (transport), km;

2) freight turnover by type of transport, tonne-km;

3) freight transport, tonnes;

4) new networks in transport, km;

5) average vehicle lifetime, years;

6) average vehicle age by type, years.


The following classification of indicators into groups, according to the elements of a complex system of sustainable socio-economic development can be complemented and modified according to the internal and external environment.

According to systematic approach rule, the components number, subjecting to an upper level of management, depending on the complexity of the tasks should be in the range of 6 to 10. The increase of this parameter reduces the handling system and the weight of each individually. Therefore, the author has taken an average of 7 indicators for each group of elements of a complex system of sustainable socio-economic development.


## RESULTS

The new model of sustainable socio-economic development, which includes more essential elements due to the progress in ICTs, globalisation and knowledge-intensification, is suggested. Since innovation is a key mechanism for the concept of sustainable socio-economic development in a new tenor of technology, the need for innovative development of all elements of the integrated system is required.


## LESSONS LEARNED AND LIMITATIONS

Implementation aggregating partial indicators into an integrated indicator for each group and their population as a whole is needed. In future studies preferable is the application of optimal aggregation theory developed L. Hurwicz, E. Malinvaud, U. Fisher and J. Chipman and can reduce aggregation error, which is understood as the difference between the original problem and the aggregated tasks results. For each group integrated indicator is proposed to develop three levels of threshold values (acceptable, marginal and critical) for sustainable socio-economic development and security.

Our literature search is not exhaustive. A much greater body of literature relating to human capital, innovations and sustainable socio-economic development exists.

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# Dynamic rate of return on investments in university education: case of Russia

by

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**STATE OF THE ART AND PURPOSE**

The aim of the paper is to develop a method to evaluate the return on investments in higher education, because educational costs are regarded in Russia as outflow without financial payback. The article demonstrates the practical possibilities of using this method by the example of the development of university graduates for the Russian higher education system as a whole and the metallurgical industry of Russia in particular.

**METHODOLOGY**

The article suggests a formula for calculating the return of investment in higher education based on the cost-benefit analysis; the calculation based on statistical and expert data is done. A survey of experts includes 57 completed questionnaires from managers of Russian metallurgical enterprises, specialized research organizations and professors of specialized universities.

**RESULTS**

Calculations show that the profitability of investments in Russian higher education is rather low, and it is higher in metallurgical education. The article opted ways to solve this problem, including an adjustment of educational programmes in accordance with the requirements of employers and the strengthening of research and innovation components of higher education.

## LIMITATIONS

All results and conclusions are valid for level of the national economy and metallurgical industry only. They are based on statistical data and the subjective evaluations of the experts, so additional investigations need to be taken.

## PRACTICAL IMPLICATIONS – The paper includes ways to increase the return on investment in higher education in Russia.

The outlay for higher education is usually regarded by governmental officials as a part of social expenses without financial payback. The paper helps to change this attitude and look at expenses for university education as investments paid back.

## ORIGINALITY

The paper solves the problem of evaluation of the return on investments in higher education by the example of the Russian higher education system as a whole and the metallurgical industry of Russia in particular.

## KEYWORDS

Higher education; cost-benefit analysis; educational costs; GDP growth; innovation system; metallurgical industry; public expenditure on education; Russia; Russian education system; university graduates.

# Session:

# ICT Management, Ethics and Psychology

Session Co-Chairs:

**Piotr Soja**, Cracow University of Economics, Poland

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# Using Geographical Information System (GIS) for identifying optimum locations for the mobile clinics, serving Internally Displaced Persons (IDP's) in Dahuk province of Iraq

by

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**ABSTRACT**

The accumulative displacement in Iraq since June 2014, have changed the demography in several areas in Iraq. 12 % of the total Internally Displaced Persons (IDP's) are in Dahuk governorate within the the IDP camp or the host communities. The sudden movement of the population has added a burden to the national health system creating a big load on the servcie provsion. Humanitarian actors have responded to the load on the primary health care by supporting the exisiting health facilities and through supporting the provsion of mobile health services. The purpose of this paper is to show how information & communication technology (ICT) can help in betterment of planning the deployment of mobile clinics. Geographical Information System (GIS) tool used, to analysis the spatial accessibility to the primary health care and to identify the optimum locations for the mobile clinics in Dahuk governorate to provide the maximum utility.

The study uses the location of existing health facilities, spatial distribution and density of IDP's and host community as well as the road network of the Dahuk governorate. ArcGIS (ESRI INC) Commercial GIS software and its spatial analyst extension used to perform the analysis. A raster file was created for the health facilities coverage using Euclidian distance. Landscan of 2014 is used for the host communities. IDPs data extracted from the International Organization on Migration (IOM) Displacement Tracking Matrix, as well as a raster were created for the spatial distribution and density of the IDP's in Dahuk governorate. Road network is rasterized. A model was built in ArcGIS and all these layers were overlaid and weighted. Areas with the highest population (IDP's and host communities) density and the lowest service coverage were candidate to be the optimum location. Given that the analysis was done for mobile services, road networks played a big role however, areas which were far away from the road network were excluded due to the logistical limitation.

Areas with highest IDP/host communities concentration and where the primary health care coverage is scares and where the road network were deemed appropriate, were identified to be optimum location for the mobile clinics. These areas can be considered the most underserved areas within the road network where the mobile clinic can be fully utilized.

Updated road network and landscan were within the limitation, which will affect the accuracy of the analysis. Inserting type of services and number of physician in the existing facility could have further enhanced the analysis.

A study within a governorate boundaries, will affect the accuracy, namely at the borders with the neighbouring governorates. However a countrywide analysis might yield more accurate result.

Health facilities data were obtained from WHO and Directorate of health Dahuk. IDP's data was extracted from DTM. Landscan and road network from common operational data set of the humanitarian community.

**Keywords**: Spatial Accessibility, Mobile clinics, Primary healthcare Accessibility, Dahuk, WHO, ArcGIS

# Legal aspects of sharing economy in tourism studies: view from transition economies

by

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**ABSTRACT**

**STATE OF THE ART AND PURPOSE:**

Development of information and communication technologies, especially rapid mobile Internet growth together with usage of mobile applications, has been facilitating new models of economic relations featured by peer-to-peer interaction. This phenomenon has been labeled as sharing economy. Online platform providing new type of business communication has become a key element in sharing economy concept. The sharing economy perfectly coupled with the experience economy prevailing in the tourism industry due to high level of authenticity provided by the hosts for their consumers. The tourism industry in fact is one of the main sectors, where the sharing economy has been flourished. In many transition economies it is the tourist sector, which has been actively developing in recent decades promoting innovations in the whole service field.

Besides well known examples of Airbnb, Couchsurfing and Uber there are other options for tourists to get to know a destination as if they were locals. Such platforms as Toursbylocals or Trip4real enable tourists to learn about a visited area on guided tours with locals, which are devoted to various aspects of historical heritage, cultural and social life. Rich gastronomic experience can be gained through services like Meal Sharing, Cookening or Eatwith. However, being in the center of a new economic model online platform companies pose a lot of questions about the ways of its understanding, legal status and legal framework in which these companies should operate. The purpose of the present study is to build conceptual framework towards legal architecture of the sharing economy focusing on activities of platform companies in tourism sector.

**DESIGN/METHODOLOGY:**

The conceptual character of the paper provides theoretical analysis with a number of illustrative cases from the tourism industry practice in transition economies. The paper is designed is such a manner that the legal dimension of the sharing economy is explored comprising various groups of stakeholders within three domains: online platform itself, enterprises and participants, who are involved in commercial interactions, and legal nature of goods and services produced.

**RESULTS:**

The paper identifies basic principles of current functioning of the sharing economy in tourism sector from the view of transition economies.

**LIMITATIONS:**

The research is focused on a certain type of economies, namely transition ones, and can be further developed by expanding its results to economies with different background.

**RESEARCH/PRACTICAL IMPLICATIONS:**

The authors seek to identify key legislative challenges addressing to which may help to build efficient regulatory framework for the sharing economy as a new economic model. This study will be of interest to tourist industry professionals and scholars interested in the current phenomenon of the sharing economy and its future.

**ORIGINALITY/VALUE:**

This paper highlights legal challenges appeared with the rise of the sharing economy through illustration of tourism sector development in transition economies.

**Keywords**: sharing economy, legal aspects, tourism development, transition economies

# Gamification design in action: the practical cases of gamification platforms for employee work motivation and citizens' civic engagement

by

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## ABSTRACT

The design and development of information systems that meet their intended operational objectives - let alone effectively support modern life - is a challenging endeavor (Niazi, et al, 2013; Hartman and Ashraf, 2002). Especially in environments of fast change, instability and economic uncertainty such as in emerging economies and developing countries (Hoskisson et al, 2000). IT investments in such economies are nonetheless essential to support existing poor infrastructure and support workers in their activities (Roztocki and Weistroffer, 2008). One of the challenges faced by these economies and globally is maintaining employee engagement with the organization they belong to and with the Information Systems these organizations introduce. The same problem is even present on a larger societal scale as maintaining citizens' productive engagement with their governments online or offline in challenging (Dargan and Evequoz, 2015; Mendonca and Alawadhi, 2015; Bista et al, 2014).

Gamification; understood as the use of motivational affordances to design value-creating, gameful systems (Huotari and Hamari, 2016; Deterding et al, 2011) has shown good effects on motivation and engagement in a variety of contexts (Zuckerman and Gal-Oz, 2014; Hamari, 2013; Landers et al, 2015; Burke, 2014); and has been employed in various information systems either as an introduced add-on layer (e.g Google Waze), or as a holistic system design practice (e.g PokemonGO). However, gamification design is no exception to the challenges IT investments face in emerging economies. It additionally has its own unique challenge of designing systems that not only fulfill their operational objectives but that additionally fulfill the psychological needs of its users to keep them engaged and using the system in question (Nicholson, 2015; Asquer, 2014; Hamari, 2013; Nicholson, 2012).

When designed effectively, gamification has the potential to increase worker productivity, engagement, wellbeing and job satisfaction (Nicholson, 2015; Nicholson, 2012;

Rigby, 2015). It also has the potential to increase citizen involvement in governance and increase their levels of civic activity, which reflects in better governmental decision making and increased levels of trust in government (Asquer, 2014; Bista et al, 2014; Nelson, 2012; Deterding et al, 2011). However, there is a reported lack of validated gamification design models that illustrates how these benefits could be brought about (Nicholson, 2015; Zuckerman and Gal-Oz, 2014). Furthermore, the context in which gamification is adopted such as the economic or environmental conditions of its usage setting, dictates its own considerations on gamification implementation (Hamari, 2013).

The aim of this paper is to adopt a design science approach to the examination and selection of gamification design models depending on the context of their application. The paper operationalizes the selected gamification design models and presents two development case studies from Egypt in two contexts, namely the contexts of employees' motivation and citizens' civic engagement as a practical illustration of gamification design in action, shedding light on potentials and challenges of gamification design and development and providing a practical illustration of how such challenges could be addressed specifically in an emerging economy in order to draw the hypothesized benefits from gamification.

The case studies indicate that user centric design, and considerations of gamification usage settings are quite essential in the development of gamified platforms that meet operational objectives. While psychological theories may suggest psychological drivers of intrinsic motivation behind why users choose to engage with certain activities more than others, the environments in which these users are dictates different design patterns and combinations of motivational affordances to engage users. Additionally, it appears that strict gamification guidelines provide structure to the development process, but also force designers into design patterns that are not always suitable to the design context. Such rigidity is not suitable for gamification design in new unexplored settings, or for design settings with an unstable nature. What may be of more value is the use of guidelines that give room for designers' judgments, or the development of gamification design models tailored to different contexts. Agile development is also helpful in this regard, as it allows for rounds of system evaluations that could detect mismatches between gamification design and their actual intrinsic value to users and usefulness when deployed in their use environment.

**Keywords**: Gamification, gameful design, design science, employee engagement, civic engagement, emerging economies.

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# Corporate social responsibility: activities in Kurdistan oil and gas industry

by

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## I. INTRODUCTION:

### Definition of CSR

After world war II, the concept of corporate social responsibility (CSR) has gained strong popularity within the business sector in general, and with societies in transition in particular mainly because of the growing number of social and economic concerns which in turn have significantly affected not only the terminology of the social responsibility of business through transforming it to CSR, but also developed it as a discipline (Carriga and Mele, 2004:51). The field of CSR nowadays comprises of large number of theories, approaches, and definitions. Most studies refer to A.B. Carroll, and C. Gopala Krishna.

But For the purpose of this paper, we will be referring to Carroll's definition of CSR (1979) who suggested that "businesses have economic, legal, ethical and discretionary responsibility to society". In other words, CSR is a term used to describe the relationship between businesses and the community at large. And the question here is: should companies investing in oil and gas and operating internationally be taking responsibility for social development of the societies they take their business to the socity?

## II. PURPOSE:

The purpose of this paper is to describe CSR activities within the oil and gas industry in Kurdistan region of Iraq. It will highlight key issues relating to current development projects planned, funded and implemented by international oil and gas companies operating in the area. This is part of these companies commitment to support the regional Kurdish government programs in developing the community and share part of government load.

Kurdistan region has one of the last untapped major conventional oil reserves on earth. The 2013 report by Kurdistan Ministry of Natural Resources states that the region has 45 Billion Barrels of oil reserve with current oil production being 600,000 barrels/day, and it is expected to reach 1 million barrels/day by year end.

This controlled geographic area provides an excellent opportunity for a descriptive module that will examine how CSR can be part of a sustainable business strategy. In Kurdistan, where this research study took place, CSR was mainly visible in the Oil and Gas sector and it started after 2006. The main reason is that CSR was mandated contractually by the Kurdistan Ministry of Natural Resources (MNR) when signing up production-sharing contracts with these multinational oil and gas industry.

These companies usually allocate funds that will go towards CSR programs to help them earn, secure or retain social licenses to operate. At the start of these oil companies operations in Kurdistan, the mining environment was not very re-assuring so the CSR activities were randomly chosen and administered, sometimes in the form of school supplies, sports equipment donations, or support for temporary power cuts. But Major shift in approach and activities can be seen now with the presence of major oil investors like ExxonMobil, Marathon, Gazprom, and Chevron, Oryx, and KNOC. Current data shows that international oil and gas companies have invested over 25 Billion U.S Dollar in Kurdistan oil and gas, in total.

The 2013 Published data -from Kurdistan Ministry of Natural Resources- shows that these companies already spent $99,744,988 on CSR project in support of 450 local community projects since the start of oil operations in Kurdistan region in 2006.

For capacity building projects, similar data shows investment of $3.37 Billion in total.

This is a huge investment for these two particular CSR disciplines. The international companies operating in this industry perceive these activities as an obligation before the government of the country they bring their business into, as well as a social marketing tool for these multinational businesses.

Are these activities being evaluated (PLAN-DO-CHECK-ACT)?

Are they well-funded?

Are they prioritized and channelled fairly?

## III. METHODOLOGY:

The research paper employed literature review of operating oil companies who signed to invest in Kurdistan oil and gas business. For the purpose of this paper, company-specific case studies will be highlighted including interesting CSR projects.

To examine the CSR activities in the oil and gas sector in Kurdistan Region – Iraq, we used and collated multi-source reports and trade –specific publications and the impact is assessed using comparative model.

## IIII. RESULTS:

In our paper, CSR projects carried out by multinational oil and gas corporates in Kurdistan-Iraq has played a major role to facilitate positive community relations needed for these multinational businesses to operate successfully.

Despite the fact that we could not find any standard method to measure the effectiveness of completed projects in terms of return on investment (ROI), these multinational businesses which run oil and gas projects in Kurdistan/Iraq contributed positively and had a great influence in developing the Kurdistan Region through their self-initiated CSR projects.

As these businesses are entering new markets for reasons other than conducting charitable community projects, these activities need to be properly logged in a safe data repository system, and reported on a standard table to stakeholders routinely.

This falls under the category of new business model development and new regulatory policy that will be the guiding framework for future CSR projects.

## V. LIMITATIONS:

Limitations were many. The CSR field is relatively new in Kurdistan Region with no standard baseline data to go back to or benchmark against.

The used reports were multi-sourced and was mostly scattered, so big efforts were made to conform it into a categorized and standardized data tables.

Also, most of the international oil and gas companies are at the exploratory stage and not full producers as yet, and we have a good reason to think the size of CSR investment might go to a different level once they are in the production stage.

Furthermore, the available literature might not be sufficient to cover all issues related to CSR practices in oil sector industry in Kurdistan Region – Iraq.

## VI. ORIGINALITY:

To date, there is no internationally published paper with internal data examining the operating oil and gas businesses, mainly company-specific activities pertaining to its CSR projects within this sector and for this particular region of the world. Few reports were published by individual stakeholders describing their experience in that field. Business studies published out by companies who carried out CSR projects in Kurdistan were found to lack basis for comparison, when benchmarked against their CSR activities elsewhere in the world.

We were unable to find solid and structured published legal and regulatory framework, policies, or cumulative data to be used as baseline when prioritizing CSR activities to benefit economic, social and cultural growth in one of the worlds emerging economies.

## VII. RESEARCH IMPLICATIONS:

This paper supports innovative policy options, encourages further research in that field, and avails the collected data to policy makers to be used as guidelines for future CSR activities. The efforts put into this research will lend value to future CSR projects once they become prioritized and equally distributed within the community.

## VIII. KEY WORDS

CSR, Ethical business, Corporate Social Responsibility Guidelines, Local Community Projects, Kurdistan Oil and Gas, Krakow University of Economics, MNR, qualitative and quantitative methodologies in CSR.

# Session:

# ICT Management, Ethics and Psychology

Session Co-Chairs:

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# Towards a proficient business intelligence for energy efficiency domain – prerequisites and data sources

by

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## ABSTRACT

Business Intelligence (BI) has been introduced in different areas in order to take better decisions and it provides diverse levels of information to the stakeholders, based on their information needs. Some organizations apply BI to control their energy costs. To achieve comprehensive knowledge of all factors that affect energy consumption, BI systems in energy efficiency (EE) domain must be supplied with large amounts of data from different sources. The data are transformed into information and advanced analysis tools enable deep insight into energy consumption reasons and relationships with other factors. The knowledge gained this way improves management of the energy usage. Within this paper, authors perform a subject-related literature review on recent works of BI implementation in EE domain. Data sources for Business Intelligence analysis in the aforementioned domain are identified, enabling future in-depth research aimed at estimating dependencies and patterns regarding electricity consumption.

**Keywords**: Business Intelligence; BI; Energy Efficiency; Facility Management

## 1. INTRODUCTION

Regardless of business domain they represent, modern enterprises make investments in technology – particularly in management information systems (MIS) (Klonowski, 2004). Hopes and objectives regarding informatization might be arranged in a long list. In such case, the leading positions would include automation, workflow and business process improvement (operational applications) (Jeston and Nelis, 2014), acquiring knowledge about systems and

devices (measurement applications), analytics and forecasting solutions (analytical applications) (Lech, 2007).

Advanced analytics is usually associated with the concept of Business Intelligence (BI). BI is an integrated set of tools used to support the transformation of data into information to support decision-making. BI analyses the performance of an organization and increases its revenue and competitiveness (Bahrami et al., 2012; Hsieh, 2011; Mettler and Raber, 2011). BI derives information and knowledge from huge volumes of business data using a set of data mining and analytical techniques (Cheung and Li, 2012; Hayashi et al., 2010; Kleesuwan et al., 2010). Recently, BI has been applied in various domains to take better decisions and to solve different problems (Azma and Mostafapour, 2012; Seah et al., 2010). The domains include higher education, e-learning, strategy-making, crime-fighting as well as finance (Aruldoss et al., 2014). BI applications supports Facility Management (FM) domain as well (International Facility Management Association, 2016).

The IFMA (International Facility Management Association) defines FM as profession that encompasses multiple disciplines to ensure functionality of the built environment by integrating people, place, process and technology (Wagnon, 2016). The FM companies offer basic services (cleaning, repair equipment and systems, periodic inspections of buildings) and often top-class support activities within energy efficiency management. Usually operational applications support the execution of background service processes, which often comprise elements of investments, logistics and financial engineering. However, energy management requires data originating from numerous sources and then BI tools are able to reveal the patterns, relations and correlations between data. Achieved knowledge creates wisdom leading to reducing energy consumption and maintenance costs of commercial facilities.

Leading organizations publish reports and research results in FM development sector for the upcoming years (International Facility Management Association, 2016; Professional Retail Store Maintenance Association, 2016; Institut für Facility Management, 2016). Organizations in their visions for the FM future underline the necessity to strengthen areas of data acquisition and processing. While energy efficiency management seems to be a hot topic in FM, the purpose of our future research is to analyze the data sources for BI system which could reveal information regarding the power consumption in buildings – along with optimizing and forecasting changes of the consumption. The rest of the paper is organized as follows: Section 2 introduces a detailed related research study on architecture, data sources for BI systems and the BI utilization in energy efficiency domain. Section 3 discusses and concludes the outcome

of our findings and describes the future work regarding data sources identification for BI tools in EE domain.

## 2. RELATED WORK

### 2.1 BI-Class System Architecture

BI encompasses broad concepts. First of all, an intelligence tool based on information and monitoring the environment using data from different sources (Petrini et al., 2004); secondly: Data Warehouses, Data Marts External Information Source Systems OLAP Data Mining Balanced Scorecard OLTP Process – Transactional Data Warehousing OLAP Process Legacy IT a technological tool to support managerial business decisions in organizations by means of software (Affeldt and Junior, 2013). Data processed by a BI solution come from diverse sources, and the data in fact are inputs to the engine (which outputs represent the information). Figure 1 depicts a framework with the technologies and components of BI system architecture.
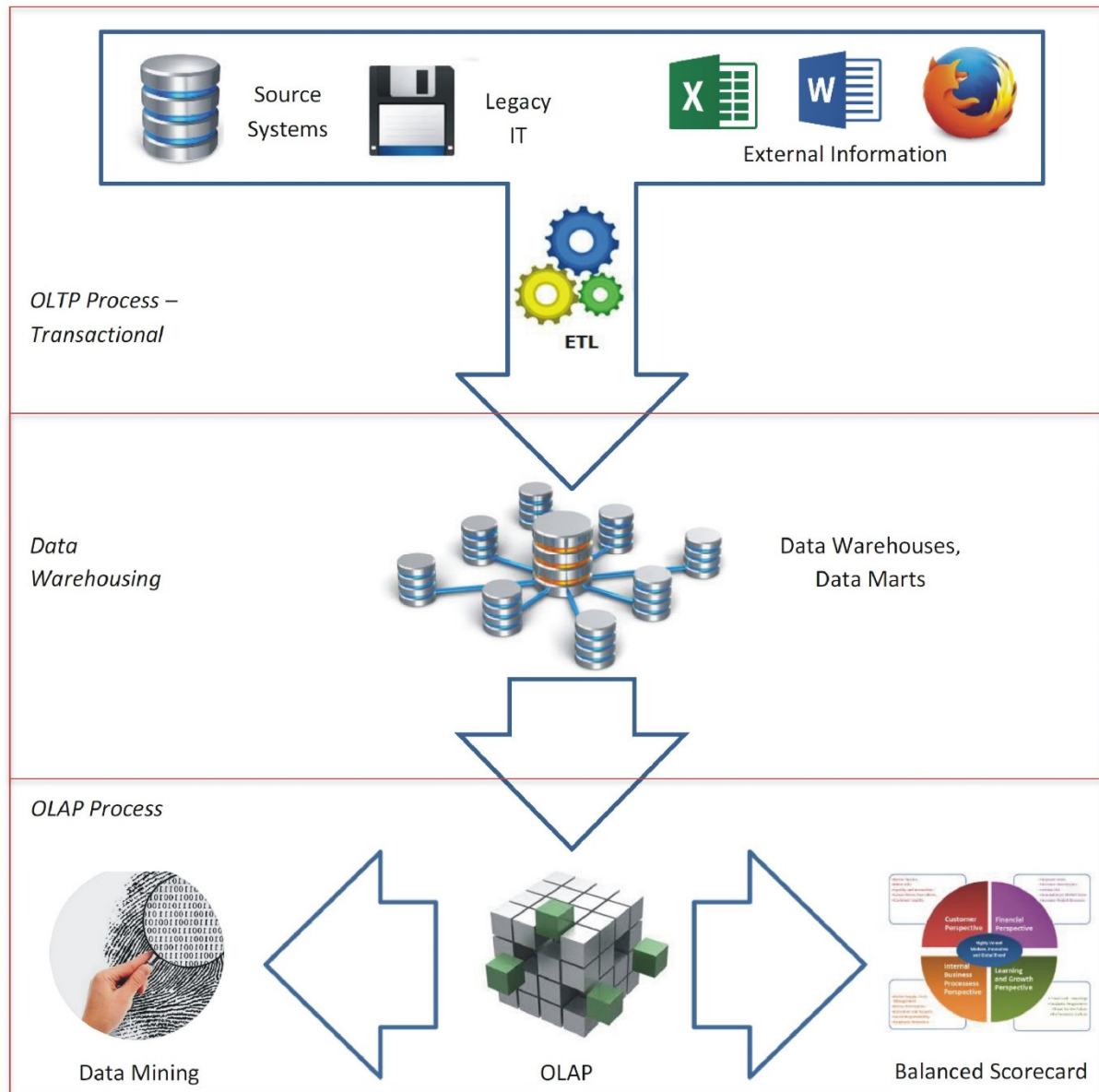
**Figure 1. Framework of BI Architecture.**

Source: own elaboration based on (Affeldt and Junior, 2013)

A BI-class system features the following components:

- data sources, such as Online Transaction Processing (OLTP) solutions, files, web services;

- data storage provided by Data Warehouses (DW) as well as Data Marts (DM) (Kimball and Ross, 2013; Inmon, 2005);

- OLAP (Online Analytical Processing) – analysis tools enabling navigation through data sets (Thomsen, 2002);

- data mining algorithms used to extract data and discover patterns of information (Taurion, 1997);

- processed information presentation – reports, dashboards, scorecards.

It is the Data Warehouse that is the foundation of a BI-class system. The warehouse gathers thematically-oriented data scattered among different sources. These data are integrated within the DW into a single, common model. For any data warehouse, the infrastructure that facilitates the retrieval of data from operational databases into the data warehouses is known as ETL process, which stands for Extraction, Transformation, and Load. A data warehouse is created within an organization as a separate data store whose primary purpose is data analysis for the support of management's decision-making process (Inmon, 2005). Data mining techniques discovers relations between data and finally dashboard displays reports, graphs and the current status of metrics and key performance indicators (KPIs). Since large Web data repositories utilize both data mining algorithms and techniques (Weichbroth et al., 2012), such sources should be considered as well. The essential features of a BI dashboard product include a customizable interface and the ability to pull real-time data from multiple sources.

## 2.2 Data Sources for a BI System

The data stored in the data warehouse might capture numerous different aspects of the business. In accordance to Radziszewski (2016), inputs for data warehouse can be categorized in many ways:

1. Input types:

   - Internal sources: transactional data from information systems (ERP, CRM), data tracking traffic on the company's website;

   - External sources: reports, web services, social media, foreign systems and databases.

2. Organization of the input data:

   - Structured data: data that resides in a fixed field within a record or file; this includes data contained in relational databases and spreadsheets, e.g. data collected through forms using the dictionaries of names;

   - Unstructured data: does not reside in a traditional row-column database (does not fit neatly in a database); e.g. e-mail messages, word processing documents, videos, photos, audio files, presentations, webpages.

3. Data reliability:

- transactional data: data from transactional systems (CRM, ERP);

- declarative data: contain information about the intentions instead of the actual decisions and transactions (for instance customer orders); data collected through social networking sites.

Most BI systems are supplied with data from files, information systems, databases and other data warehouses. However, in recent years new data sources have been identified – e.g. the Internet of Things (IoT), market research (interviews, scanning) or open-source intelligence OSINT (data collected from publicly available sources such as radio, television or press). With a variety of data sources, each company determines the Master Data – the data being relevant from the business point of view. A major challenge is both gathering data and combining them into Master Data collections. Combining data requires adherence to certain rules, e.g. using time dimension as the data connector.

Energy efficiency management requires data from multiple sources. The Oracle study in United States found that the two largest volumes of data being extracted are power outage and voltage (Hoss, 2012). According to Marasco and Kontokosta (2016), most data come from measurement systems, such as Building Management Systems (BMS), Energy Management Systems (EMS), Distribution Management Systems (DMS) and Intelligent Building Systems (IBS). Smart meters along with other projects are delivering exponentially more data and utilities are struggling to manage, analyze and use this data efficiently and effectively (Hoss, 2012). To achieve wisdom and generate recommendation of property maintenance, a BI system for EE requires other data sources: media-related invoices, weather, building spaces etc. Based on a single multidimensional data source, BI tools can discover some patterns, relations and correlations between data. Achieved knowledge creates wisdom leading to reducing energy consumption and maintenance costs of commercial facilities.

## 2.3 Business Intelligence for Energy Efficiency Domain

The role of Information Systems in the power industry is visible on many levels. According to Kaleta and Toczyłowski (2009), the most important systems include Enterprise Resource Planning (ERP) solutions, Customer Relationship Management (CRM), billing, call center, Global Information Systems (GIS), Supply Chain Management (SCM), Decision Support Systems (DSS), passporting/stocktaking/security solutions etc. All systems provide

data, which require analytical and reporting tools to analyze large amounts of structured and unstructured data in ways that help people make better business decisions. Both scientific studies and press reports confirm that the use of Business Intelligence systems in the power industry is no more a novelty; one lives to see the already numerous implementations (Pamuła and Zieliński, 2007; Kaleta and Toczyłowski, 2009). As electricity providers are concerned, the application of multi-dimensional Business Intelligence impacts the following areas (Hoss, 2012; Kaleta and Toczyłowski, 2009):

- customer behavior – manufacturers and suppliers of energy analyze the behavior of consumers in order to develop marketing campaigns and commercial offers targeted precisely at specific consumer sub-groups;
- technical indicators – oversight of provider's own technical infrastructure through confronting data originating from the operation of the hardware, the automation systems, operation control systems or weather services;
- economic indicators – developed using both internal and external data (the latter being Energy Exchange Office, Power Exchange Market, Electricity Trading Platform);
- management and decision-making – making market-related decisions, production planning, contract management, risk management, forecasting, generating basic analyses and documents related to the mandatory reporting.

It turns out that the use of BI in the management of EE is also one of the areas of FM. Property owners want to effectively manage energy efficiency through knowledge, which affects the consumption of electricity in buildings. Energy is going to continue to get more and more expensive. It is recognized that increases in energy price are out-stripping inflation and this trend is expected to continue as fossil fuel sources become more scarce and harder to extract (Wilson, 2016). Facility owners or holdings (such as store chains) do not have their own renewable energy sources. So, they are placing much greater emphasis on managing their energy use. They introduce energy management programs to mitigate energy loss, optimize through automation and regulation, monitor, maintain, improve and launch employee energy saving campaigns.

System automation in buildings (e.g. HVAC via BMS's), regulation (lightning via timers, control systems) and energy consumption monitoring (via smart meters, sensors) in together with external sources provide large set of data. BI for energy users provides real-time energy usage information and advanced analysis tools that enable continuous improvements in energy

management. Energy managers focus efforts on the area of the energy value chain that can deliver the most improvement at the time. BI enables managers to create, introduce and control savings programs, identify anomalies in power consumption, adjust the tariffs in accordance with the needs. This leads to maximizing the return on the capital expenditures (CapEx), necessary to excel in energy efficiency and improve the bottom line (Wilson, 2016).

## 3. CONCLUSIONS AND FUTURE WORK

BI is a combination of technology and management practices that prioritizes collecting, providing access to, and analyzing large amounts of data in ways that help people make better business decisions. In times of common BI applications, energy management has evolved from what was once simply paying the monthly energy bills into a complex, multi-disciplinary approach to energy efficiency requiring information sharing across the organization (McKinstry, 2016). For companies, energy-related expenses have a significant impact on a bottom line. To remain competitive, businesses cannot afford to simply pass along their escalating energy costs to customers, rather observe their own buildings, systems and staff behavior to create energy management policy.

In this paper, a literature review was performed, addressing three major areas: BI systems' architecture, data sources for BI as well as the application of Business Intelligence solutions within energy efficiency domain. As the further research is concerned, the authors shall deepen the analysis related work – in particular seeking quality work addressing the use of BI systems to manage energy efficiency of facilities run by commercial networks. The knowledge acquired knowledge will establish a basis for developing and conducting studies aimed at identifying sources of data that combined enable estimating dependencies and patterns regarding electricity consumption. The authors are motivated to address the questions regarding the determinants of energy consumption within the commercial building as well as ways to process and analyze the data from these sources in order make the acquired knowledge the force behind the effective management of facilities' energy efficiency.

Large amounts of energy-related data may prove to be a challenge for the analysis. With the increase in smart meters usage, utilities have the added responsibility of capturing and leveraging data to generate better decision-making (Hoss, 2012). Organizational silos and a dearth of data specialists are key obstacles that prevent big data from accomplishing its biggest objective: enabling more effective decision-making. A simple, critical step that often is

overlooked is making personnel aware of available data (McKinstry, 2016). Data visualization is needed to identify the trends and problems across all of them; the one guaranteed aspect of energy is change: change in prices, technologies, fuels, regulations and suppliers, while Business Intelligence is the most effective way to keep successfully navigating change.

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# The importance of historical education in the development of social capital and local development

by

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**SUMMARY**

In the article an issue of historical education as an example of the key element for the construction of local identity, communication in the internal dimension of the community. As part of the base was considered creation, on the basis of historical education, social capital. The process of identity formation is characterized by cultural creations of the community, these are creations of the material and their intangible connotations in the minds of citizens. Created in this way, local product, characteristic for the community, creates her identity and the range of capital. Particularly important in the era of the collapse broader authority and collective identity in terms of globalization. In such circumstances, just a local identity may be important anchor, giving individuals the generational continuity, shaping their sense of security, the adequacy of the social role and place in the wider structure.

# Shaping gender identity in virtual communication: a case study of poles

by

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**ABSTRACT**

The Internet provides individuals with a lot of opportunities for instant communication with people all over the world. This communication tool has been rapidly approved by many individuals due to speed and ease-of-use. Although computer communication appears to have the advantage of permitting for rapid interaction and exchange of information, it may, yet, only offer the recipient with the information the sender desires them to notice. This offers the chance to pretend to be someone else. Anonymity on the Internet allows one to take on different personalities and discover new identities. Identity distortion seems to be a widespread phenomenon in cyberspace and gender appears to be one of the most flexible, and extensively mistreated, social features. There have been many studies that demonstrate that individuals may take on identities of the opposite gender (cf. Bechar-Israeli, 1995; Danet, et. al. 1996; Lee, 1996). Yet, verbal cues in text messages frequently expose a person's identity, even if he or she is communicating while using an online nickname belonging to the opposite gender. The aim of this paper is to show how individuals shape their identity in computer-mediated communication (CMC). Reconstructing a message board utility that they are acquainted with, each subject in this study was requested to rate a created text message by means of the Bem Sex-Role Inventory (BSRI). This study exploited a two-by-two factorial design that manipulated the gender-oriented prompts in the text message and the gender of the nickname or handle which accompanied the message. The outcomes exhibited different effects of masculine and feminine personality items of the BSRI in each of the four conditions discussed.

**Keywords:** identity, deceptive communication, computer-mediated communication, virtual communication

 **INTRODUCTION**

Interpersonal communication on the Internet seems to be largely textual, one cannot willingly determine the demographic as well as social characteristics of the author of a message. Physical appearance offers immediate information about an individual's gender, race, social status, or age. Even clothes and accessories provide references to demographic and social characteristics (Lurie, 1981; Cullum-Swan & Manning, 1994). Vocalics (Tusing & Dillard, 2000; Pallilo, 1999) help classify the race and gender of invisible speakers. But in the absence of visual and auditory stimuli readers may depend on voluntary social identification (e.g. the name of the author) or, failing that, linguistic cues in discriminating the demographic identity of the author of a message, under the presumption that specific words or language styles appear to be more typical of one gender than the other (Lobel, et. al., 1999; Guerin, 1994; Smith & Whitlark, 2001).

Users in cyberspace frequently exploit the intangible nature and freedom from regulation of on-line communication. Normally, people are more outspoken over the Internet and communicate under a pseudonym (Bechar-Israeli, 1995; Danet, et. al. 1996; Jacobson, 1999), also commonly identified as a "handle". Anonymity permits people to operate under a web of deception by communicating under the guise of someone from a different social group than one's own (Bechar-Israeli, 1995; Danet, et. al. 1996; Lee, 1996).

Identity misrepresentation seems to be widespread in cyberspace and gender is one of the most willingly malleable, and broadly abused, social characteristics. In an experimental study in which participants were allowed to pick the handle of their choice, a third chose names typical of the opposite gender (Jaffe, et al. 1995). Although women have now attained parity with men in terms of Internet access (Pew Research, 2001), it was previously a male-dominated medium and impersonating females in chat rooms, discussion groups and multi-user environments was a widespread means of attracting communication partners (Goodson, et. al., 2001; Smith & Whitlark, 2001; Parks & Floyd, 1996). More lately, the need to distort one's identity has been determined by privacy concerns that lead Web surfers to supply false personal information as well as maintain multiple identities (Williams, 2000) to stop spammers. Furthermore, many stories have been told about men imitating women over the Internet with concealed motives (e.g. Bruckman, 1993; Spender, 1995; MacKinnon, 1996). In one infamous incident, a male psychotherapist copied a female amputee (van Gelder, 1991).

Even when manifest gender cues such as the first name of the author of a message are not supplied, individuals are prone to infer them. Unless there are gender cues within a written message, most individuals are prone to allocate the generic "he" to anonymous messages (Bruckman, 1993; Merritt & Kok, 1995). Furthermore, the hidden gender cues that are existing are frequently interpreted through sex-role stereotypes, and could differ from individual to individual grounded on each person's own sex-role identity (Bruckman, 1993). Previous research (Witmer &Katzman, 1996) displayed that there are only slight obvious differences between male and females in online discourse. Females were more apt to use graphical cues (i.e. emoticons) than men, but were no more prone to exploit challenging or aggressive language.

The gender identity of the recipient of a message might also be significant. Hence, the aim of this study is to determine whether the gender identity of online authors can be determined when a pseudonym of the opposite sex is used and the degree to which those perceptions rely on the gender identity of the receiver of the message.

## THE PSYCHOLOGY AND GENDER IDENTITY

The apparent flexibility of gender identity in on-line discourse rises again the question of what it denotes to be masculine or feminine, beyond the physiological attributes of male and female gender. This issue was mentioned by psychologist Sandra Bem (Bem, 1974, 1981) against the backdrop of the early Women's Movement a generation ago. The Bem Sex Role Inventory (BSRI) was constructed for conducting empirical research on gender role orientation or psychological androgyny. Gender role orientation can be recognized as the femininity or masculinity of a person as a function of the sex that he or she most strictly signifies (Bem, 1981). A person's gender is characterized by his or her masculine and feminine personality traits and varies from his or her sex, which is the biological representation of what is male or female. For the purposes of this paper, the word "gender" will be employed when mentioning gender role orientation.

The BSRI (Bem, 1981) comprises personality characteristics that appear to be stereotypically feminine (e.g., affectionate, gentle, understanding, sensitive to the requirements for others) and others that are stereotypically masculine (e.g., ambitious, self-reliant, independent, assertive). The psychological traits of masculinity and femininity are not to be blurred with a subject's biological and physical gender. For example, an individual who is

female by gender could show masculine traits, as could someone of the male gender present some feminine traits. An individual who scores almost equivalently in both masculine and feminine traits is believed to be "psychologically androgynous" (Bem, 1974; 1977; 1981). More lately, the BSRI has been altered to evaluate the gender role perceptions of others (e.g. Holt & Ellis, 1998).

## GENDER ROLE ORIENTATION ONLINE

Gender role orientation appears to be thus conceptualized as a personality trait that is recognized at an early age and should be comparatively constant. Furthermore, society imposes sanctions for departing from the expectations signified by gender role identity. Johnson and Miller (1998) distinguished that anonymity in Internet communication permits for more free-flowing, occasionally offensive discourse since law enforcement in cyberspace is problematic; anonymity allows people to behave in ways that are considered socially unwanted and which they would not generally perform if they were identifiable. Yet, it also lowers the credibility of information as one will not be able to tell whether information has been altered from its original form. Therefore, anonymity can remove the fear of consequences in computer-mediated discourse. It can also be constructively applied to help decrease the effects of prejudice on communications so that individuals contributing to anonymous communication can do so without any stigma involved.

Bechar-Israeli (1995) observed that nicknames frequently helped as a reflection of identity or an exemplification of prowess associated with identity. Bechar-Israeli claimed that under the umbrella pseudo-anonymity (gender could still be recognized through the transmission of voice); women's nicknames mirrored a dichotomy – either decent or indecent. The fact that these females would never meet the receiver of such messages - thus never having their real identity or location exposed - allowed them to exploit nicknames that imitated sexual connotations and stereotypes, probably in exploration of an alternate identity. In Internet Relay Chat environments, many males possibly adopted female nicknames to encourage self-disclosure from another (presumed) female.

Jaffe, Lee, Huang, and Oshagan (1995) studied the exploitation of pseudonyms and whether or not they reduce the gender-based differences of communication patterns in a computer-mediated communication context in which the employment of real names and pseudonyms was experimentally manipulated. They noticed that involvement level in the

pseudonymous conference was higher in comparison to the real-name conference and female were more predisposed to disguise their gender with their pseudonym choice rather than males. The condition also influenced sex-type communication behavior. Men were more apt to display social interdependence (a stereotypically female communication pattern) in the pseudonymous rather than real-name CMC context; and men were less prone than women to display social interdependence in the real-name context, but not in the pseudonymous context.

## HYPOTHESES

Thus, it is supposed that males who mask their gender role orientation online have a to some extent intimidating agenda, wanting to extract revealing disclosures from females. Females are expected to exploit male nicknames with the aim of exploring alternative identities in the haven of cyberspace. Yet, both males and females should be attentive to attempted gender deception, although possibly for various reasons and to divergent degrees.

Therefore, gender deception is generally practiced on the Internet by the choice of "handles" from the opposite sex. Still, language usage is less readily masked. It can be hypothesize that Internet users employ language cues to perceive gender deception. When the gender of the handle and the gender of the language are dependable, the recipients of the communication will assign matching gender role characteristics to their communication partners. When the gender of the handle and the gender of the language are inconsistent, recipients will assign intermediate levels of gender suitable characteristics:

**H1:** The gender of the handle will be directly linked to the perceived gender role orientation of the originator of the communication.

Specifically, communicators with male handles will be distinguished as more masculine than communicators with female handles. Communicators with female handles will be recognized as more feminine than communicators with male handles.

Another issue that ought to be addressed is the correlation between the language used in CMC and cues to a person's `true" identity observed. With the aim of exploring computer-mediated discourse, one ought to first regulate whether there are any gender alterations between online and other forms of communication. Studies indicate that there is certainly a difference between traditional (i.e. face-to-face and spoken-verbal) and computer-mediated communication (CMC) (e.g. Condon & ech, 1993). Collot and Belmore admit a new form of "discourse complexity" (1993, 27) shaped by computer-mediated communication. Employing

Hallidayan model as a base for analysis, Yates (1993) carried out a quantitative content analysis of texts gained from computer-mediated communication, writing, and speech. The author determined that there were significant differences between all three forms in five different semantic modal groups, namely hypothetical, volition, possibility, ability, and obligation. Werry (1993) carried out an ethnographic analysis of asynchronous IRC text, and offered excerpts as exemplars of computer-mediated discourse. The author stated that in trying to imitate face-to-face communication while functioning within a text-based context, online discourse had transcended conventional definitions of discourse, thus generating a new, multi-textured form of analysis.

Many studies concerning traditional discourse have determined that there is a difference between male and female language. When compared to male language, female language frequently has a tendency to specify higher social warmth, display higher aesthetic quality and emotional expressiveness, exploit more adjectives and adverbs, and offer more cues towards support and rapport-building (Lakoff, 1973; Mulack & Lundell, 1986; Bate, 1988; Tannen, 1990).

It can be summed up from both traditional research on gendered linguistic differences, and differences in discourse of various forms (face-to-face, written, and computer-mediated), that the context of cyberspace generates a different environment and perhaps even a different perception of language and gender stereotypes. Henceforth, the aforementioned assumptions help express the following hypothesis:

**H2:** The implied gender owing to the language style will not be related to the perceived gender role orientation of the originator.

Yet, the style of language could be significant as a means of detecting gender deception. When the information from the handle and the language style are varying, recipients of a communication should therefore be less prone to attribute gender role orientation characteristics along with the gender of the communicators handle. Consequently, one can state that:

**H3:** Handle and language style will indicate a tendency to interact.

Specifically, individuals should not classify the masculine messages with female handles ("deceptive females") as masculine. Also, individuals should not classify the feminine messages with male handles ("deceptive males") as feminine.

Research has also revealed that males are perceived as more suitable to take on fake identities on the Internet, including that of a female persona (Spender, 1995; Bechar Israeli,

1995; Turkle, 1995; Witmer & Katzman, 1996; MacKinnon, 1996), it is assumed that participants would accept this assumption:

**H4:** The effects of handle and language will be more distinct for perceived male gender role orientation than for perceived female gender role orientation.

The gender of the respondent should also be important. Since males are less flexible in their gender role orientations (Suler, 1999) than females and the social sanctions that ask for violating their prearranged gender role orientations are more severe, males should be more attentive in detecting deception:

**H5:** The effects of gender deception will be stronger for males than for females.


### RESEARCH METHODS

The instrument employed in this research was a self-report questionnaire, managed in the form of an online survey, exploiting the items in the short BSRI. The web-based format was relevant to the research design, as the study examines asynchronous online communication in the form of message boards. For the purposes of verifying the hypotheses, the short form BSRI is employed. The short form "constitutes a refinement of the Original [60-item] BSRI, and will serve as a convenience in scoring" (Bem, 1981, p. 12). The short BSRI involves 30 items: 10 masculine, 10 feminine, and 10 filler traits. In a confirmatory analysis of both the long and short forms of the BSRI, Campbell et al. (1997) regulated "that the short form has paradoxically shown to generally yield more reliable scores" (p. 118). This instrument was exploited to determine both the gender role identity of the respondents as applied to themselves and as applied to a stimulus individual. Four distinct surveys were managed online, each in a string of four webpages. Users were first stratified by gender and then randomly allocated to each of the four conditions. All four surveys were practically identical replications of each other, except for the text of the opening posting on the first page of the survey. The scales were internally reliable for rating the confederate text message ($\alpha$=.81 for masculine items; $\alpha$=.81 for feminine items) and when subjects employed the BSRI to rate themselves ($\alpha$=.74 for masculine items; $\alpha$ =.80 for feminine items).

By means of guidelines from previous research on gender differences in language and discourse (Spender, 1980; Tannen, 1990; Tannen, 1994; Roulis, 1995; Herring, 1996), two different text messages were composed that had similar syntax, with specific words replaced to reflect either male or female language styles. The hypertext design of the message was created

to bear a resemblance to the message board that they made their regular postings on. This facilitated to preserve the ecological validity of the experiment. Depending on the action, each message was labeled with a male or female name, dependent on the manipulation of the design. The topic of the message was the war on terrorism. The topic was selected since it was a subject that everyone knew about and affected the whole subject population irrespective of gender, race, or national origin. At the end of the experiments, subjects received a debriefing e-mail that informed them of the deception.

After posting the reply to the message was the subject directed to a survey page, in which he/she was requested to rate the message author on a 7-point scale, based on the 30 items in the BSRI. After finishing that post, they were next directed to a page requesting them to rate themselves grounded on the same 30 items. On the final page, subjects were requested to deliver their demographics and were asked questions concerning their own computer and Internet usage.

For the purposes of this study, the word "sex" will be used to imply whether a person identifies as male or female; and the word "gender" will be used to denote a person's masculinity or femininity scores on the BSRI. The word "handle" is used interchangeably with "name", as "handle" is frequently used in chatrooms to imply the nickname that a person has allocated to himself or herself.

The names exploited for the male and female handles (Jacob and Emily) were selected from a list that showed the most common baby names in 1998 in the state where this study was based (Michigan Department of Community Health, 2002a & 2002b).

**RESEARCH DESIGN AND SAMPLING**

The two questions set by the literature review creates two independent variables, namely handle and language style, of which both male and female qualities function as the different dichotomous levels. Henceforth, the experimental design is that of a 2 by 2 factorial analysis, embodied by the diagram below:

| N= 150 | | Language Style | |
|---|---|---|---|
| | | M | F |
| handel nickname | M | n1=37 | n2=39 |
| | F | n4=38 | n3=36 |

**Table 1: 2 x 2 Factorial Design**

The research design constitutes four manipulation groups, namely (1) male handle, male language style; (2) male handle, female language style; (3) female handle, male language style; and (4) female handle, female language style. The large initial sample was divided into the four groups first by random stratification of each subject by gender, then randomly assigning them into each of the four groups – to result in/generate an equal number of male and female participants in each group. In expectation of subject drop-outs, duplicates entries, and nonresponse, researchers targeted a total of 180 subjects with the intention of achieving at least cell sizes of 30 in each condition. There were a total of 150 respondents (80 male, 70 female) to the study. They were recruited from several backgrounds.

## RESULTS

Table 1
**Tests of Between-Subjects Effects**

Dependent Variable: total message rating score for all masculine items

| Source | Type III Sum of Squares | df | Mean Square | F | Sig. |
|---|---|---|---|---|---|
| Corrected Model | 5543.458ᵃ | 7 | 791.924 | 40.813 | .000 |
| Intercept | 126245.674 | 1 | 126246.674 | 6506.772 | .000 |
| HANDLE | 5201.660 | 1 | 5201.660 | 268.176 | .000 |
| LANGUAGE | 67.136 | 1 | 67.136 | 3.511 | .063 |
| GENDER | 21.328 | 1 | 212.328 | 1.151 | .285 |
| HANDLE * LANGUAGE | 120.613 | 1 | 120.613 | 6.319 | .013 |
| | 8.028 | 1 | 8.028 | .465 | .496 |
| HANDLE * GENDER | 21.180 | 1 | 21.180 | 1.195 | .276 |
| | 14.252 | 1 | 14.252 | .786 | .377 |
| LANGUAGE * GENDER | 2570.717 | 133 | 19.404 | | |
| HANDLE * LANGUAGE * GENDER | 136891.000 | 150 | | | |
| Error | 8124.184 | 150 | | | |
| Total | | | | | |
| Corrected Total | | | | | |

a. R Squared = .682 (Adjusted R Squared = .666)

The masculine and feminine rating scores for each of the four conditions were first tabulated. A 2 (male/female handle) x 2 (male/female language) x 2 (male/female gender of subject) analysis of variance was carried out on both the masculine and feminine gender role orientation scores. Initial runs comprised the gender role orientation of the respondents as covariates, but they had no consequence and so were omitted from these analyses.

For the masculine items, there were no important results noticed for language and gender of the subject, but there were important effects noticed for handle ($F$ (1, 133)=268.176, p <.01, adjusted R Squared =.666). There was also significant interaction observed between the

handle and the posted language ($F$ (1, 133)=6.319, p<.05). These results are presented in Table 1.

The nature of the interaction depicts that the language style of the message seems to be of no importance when it comes affixed with a male handle or name and that the posting is supposed equally as male. Yet, it does not specify the same results/effect when affixed with a female handle, as the message comprising male language style has to some extent a higher masculinity score.

Table 2
**Tests of Between-Subjects Effects**
Dependent Variable: total message rating score for all feminine items

| Source | Type III Sum of Squares | df | Mean Square | F | Sig. |
|---|---|---|---|---|---|
| Corrected Model | 4644.892[a] | 7 | 663.556 | 22.230 | .000 |
| Intercept | 117016.731 | 1 | 117016.731 | 3920.377 | .000 |
| HANDLE | 134.578 | 1 | 134.578 | 4.509 | .036 |
| LANGUAGE | 4400.412 | 1 | 4400.412 | 147.422 | .000 |
| GENDER | 23.850 | 1 | 23.850 | .802 | .372 |
| HANDLE * LANGUAGE | 54.994 | 1 | 54.994 | 1.909 | .169 |
| HANDLE * GENDER | 25.710 | 1 | 25.710 | .861 | .355 |
| LANGUAGE * GENDER | .237 | 1 | .237 | .008 | .928 |
| HANDLE * LANGUAGE * GENDER | 1.884 | 1 | 1.884 | .063 | .801 |
| Error | 3979.930 | 133 | 29.839 | | |
| Total | 126906.000 | 150 | | | |
| Corrected Total | 8614.823 | 150 | | | |

a. R Squared = .539 (Adjusted R Squared = .515)

For the feminine items, significant effects were noticed for both the handle ($F$ (1, 133)=4.509, p<.05, Adjusted R Squared=.515) and the language ($F$ (1, 133)=147.422, p<.01),

but they are independent from each other as no significant interaction was noticed. These results are displayed in Table 2.

The outcomes only somewhat verified H1, since messages affixed with male handles were nearly correspondingly perceived as male, notwithstanding the text message. Yet, subjects were able to classify feminine traits in the post. The outcomes failed to verify H2, for both the masculine and feminine items, as there were no important results detected for gender of the language style and gender of the subject. H3 was only partially supported as there was an interaction for the masculine items $(F(1, 133)=6.319, p<.05)$ but not the feminine items in the BSRI. H4 was also partially confirmed as only the effects of perceived male gender role orientation (masculine items) was more substantial for the handle $(F (1,133)=268.176, p<.01)$ but not for the female gender role orientation (feminine items). On the other hand, the effects of language had a more prominent effect for the feminine items $(F (1,133)=147.422, p<.01)$. Lastly, the inconclusive outcomes for both feminine and masculine items do not verify H5, as the interaction of the handle and language influences the masculine rating of the message, but the gender of the handle and the gender orientation of the language appear to independently affect the femininity ratings of the message.

## DISCUSSION

The results recommend that when affixed with a male handle or name, a posting is almost equally perceived as male, regardless of the gender cues in the language. One explanation could be that subjects evaluate male and females differently; using pre-existing information and bias based on stereotypes and perceived gender cues. Another explanation that could be suggested for this is that the English language itself is perceived to have more socially desirable feminine traits (female-valued terms) than masculine traits. In their study of a representative sample of 1,710 trait terms in the English language, Sankis, Corbitt and Widiger (1999) found that there are more female-valued terms than male-valued terms. In addition, since the handle is the first obvious identifier of the gender of the person posting the message, subjects may already have the preconceived perception of what to expect from a male. Some of the language (style) used in the female message might have displayed (tentativeness) tentative, a trait commonly prescribed to females. However, Carli (1990) noted that the use of tentative language by men had little effect on their ability to influence others. This may be because they have been stereotyped to be more competent than females, regardless of what they say.

## LIMITATIONS

This study employed the limited number of respondents as the main sample population and is not illustrative of the whole spectrum of Internet users online. Since young people have a tendency to be more frequent Internet users, they could be more conscious that there are individuals who take on false handles and identities in cyberspace. Furthermore, even though the message the subjects were asked to rate was carefully constructed employing gender-specific guidelines founded on linguistics literature, one experiences and differences may lead one to distinguish certain words in a different way, and hence the originator of the message as more masculine or feminine.

## CONCLUSION AND IMPLICATIONS FOR FUTURE STUDIES

This study discusses messages posted on a message board, which seems to be a form of text-based electronic communication that is employed to a slighter degree by Internet users compared to e-mail or instant messengers. Supplementary investigations into the psychological, social, cultural, and/or technological means of text-based computer-mediated communication should be implemented with the purpose of regulating the factors that generate such a difference. Only masculinity and femininity scores were examined for this study – the rationale that grounds respondents to notice a message as masculine or feminine could also be further explored. The effects of distinct communication behavior and habits of the subject could be examined in succeeding studies. The influence of perceived credibility of the message source can be an extra variable that can be studied in a future study.

The main purpose of this study is to study gender stereotypes in computer-mediated communication. Although there appears to be indication that there are gender inequalities in terms of technological use and proficiency (e.g. Allen, 1995; Witte, Amoroso, & Howard, 2000) and that gender-based sexism happens in the form of online sexual harassment (e.g. Spender, 1995), online identity theft and cyberrape (e.g. MacKinnon, 1996), this study only discusses the inherent psychological traits that are frequently accredited to males and females. The effect of anonymity and false identities provided in cyberspace, particularly the danger it poses to vulnerable populations such as females and children can also be examined.

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# The game changer strategy of reliance jio – a case study on predatory pricing

by

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## ABSTRACT

Reliance's big bang launch of Jio is certainly a boon for the masses of the country but has left a big question mark on the possibilities for shareholder wealth creation in the long term. The tariff plans announced by Relaince Jio will be a game changer for the telecom industry and are expected to drive greater adoption across data and voice segments but it might also impact the profitability and sustainability of existing operators. So the study deals with to find the answer for the other telecom operators claimed that Relaince Jio was deploying what is called "predatory Pricing".

**Keywords:** Predatory Pricing, Department of Telecommunications (DoT), Telecom, Telecom Regulatory Authority of India

## INTRODUCTION

Challenges in Telecom Industry scenario in India The telecom sector in India remains one of the key business grounds for telecom giants like Vodafone Group PLC (VOD), the second largest operator after China Mobile Limited (CHL) and the home turf of the world's third largest telecom operator, Bharti Airtel Limited, based on subscribers. However, the Indian telecom market is characterized by one of the lowest call tariffs in the world due to growing competitiveness with increased participation by some of the largest players in the global telecom space. This is resulting into high losses and diminishing profitability of the operators in India. The sector however lacks proper infrastructure, which has restricted its growth to only 2G and 3G network deployments while developments in the LTE space is still lagging. Government has approved 100 per cent foreign direct investment (FDI) in the telecom sector, meeting a key demand of the fund-starved industry. It has been decided to increase FDI cap in

telecom to 100 per cent from 74, up to 49 through automatic route and beyond that FIPB. Foreign investors will no longer need to partner with Indian investors in order to comply with regulatory requirements as they can have complete ownership of the business.


## BACKGROUND

### Telecom Industry scenario in India

The history of the Indian Telecom sector goes way back to 1851, when the first operational landlines were laid by The British Government in Calcutta. With independence, all foreign telecommunication companies were nationalized to form Post, Telephone and Telegraph, a monopoly run by the Government of India. The Indian Telecom Sector, like most other infrastructure sectors is controlled by the state. The Department of Telecommunications (DoT), reporting to the Ministry of Communications (MoC) is the key body for policy issues and regulation, apart from being a basic service provider to rest of country. By an act of Parliament, the Telecom Regulatory Authority of India (TRAI) was formed to be the regulatory agency. Ministry of Communication: All the operations of this sector come under the control of MoC. It is responsible for all major policy changes, planning, supervision, spectrum control, etc. Department of Telecommunications: DoT was formed in 1985 when the Department of Posts and Telecommunications was separated into Department of Posts and Department of Telecommunications. Till 1986, it was the only telecom service provider in India. It played a role beyond service provider by acting as a policy maker, planner, developer as well as an implementing body. In spite of being profitable, non-corporate entity status ensured that it did not have to pay taxes. DoT depends on Government of India for its expansion plans and funding. Its pivotal role in the Indian telecom sector has got diluted after formation of TRAI- Telecom Regulatory Authority of India. India is the world's second-largest telecommunications market, with 898 million subscribers as on March 2013. The sector's revenue grew by 13.4 per cent to reach US$ 64.1 billion in FY12. Telecom infrastructure in India is expected to increase at a compound annual growth rate (CAGR) of 20 per cent during 2008-15 to reach 571,000 towers in 2015. Internet traffic in India is expected to reach to 2.5 Exabyte per month in 2017 from 393 petabytes per month in 2012, as per a Cisco study. In addition, the wireless connectivity in India is expected to grow at about 40 per cent traffic by 2017, up from 38 per cent in 2012.

**Re-Entry of RIL in Telecom sector**

Telecom has always been a sector close to the heart of the Mukesh Ambani, who is known for his quick execution of mega projects, launched his 'dream' mobile services in 2003- 04 with a slogan "Kar Lo Duniya Muththi Mein" (take control of the world). However, he had to give up Reliance Infocomm (which later became RCom) to Anil Ambani in 2005 when the Reliance Empire was split. In 2010, Reliance entered Broadband services market with acquisition of Infotel Broadband Services Limited. Now it is Reliance Jio Infocomm Ltd.(RJIL), wholly owned by RIL for 4800 crore (US$730 million). Infotel Broadband was the only successful bidder for pan-India fourth-generation (4G) spectrum auction held by Government of India. Embodying the latest technology, 4G-LTE offers data transmission at almost four times the speed of 3G and 16 times the speed of 2G. This is expected to cause problems for 3G players such as Bharti, Vodafone and Idea, who have paid a huge price to buy the spectrum. Infotel Broadband is the brain child of Manoj Modi, a close aide of RIL Chairman Mukesh Ambani, who was responsible for the original telecom venture of the group known as Reliance Infocomm. In Oct. 2013, Reliance Industries Ltd. Telecom unit received a unified permit from India's Department of Telecommunications to offer telecommunications and related services. The license will allow the unit, Reliance Jio Infocomm Ltd., to offer telecom services including voice telephone services under a single permit in all 22 telecom service areas. Until Aug. 2, 2013, India's telecom rules didn't allow Internet firms to provide voice telecom services. Companies in the sector had to take separate licenses for providing these services and pay license fees to the government based on the services they provide and the regions they operate in. In August 2013, India's government changed rules and introduced a set of permits to allow companies to provide voice services, which account for 85% of revenue in India's telecom sector. It also allowed companies to convert their existing licenses into a unified license by paying a fee to the government. Investment in Infrastructure by RIL- The Crucial Decision Originally, RIL had planned an asset-light rollout model targeted at Internet data consumers in cities and small enterprises. Mukesh Ambani had in 2010 said the company would not invest in passive infrastructure like telecom towers and optic fibre. But in a rethink of its earlier strategy, the company was looking at the possibility of setting up around 1,00,000 towers for its 4G venture and also planned to double its capital outlay for the launch. Outsourcing of key operational functions, a concept pioneered by Indian mobile phone companies, has helped service providers successfully implement the low-cost high volume business model. This is also been the key to India adding close to 600 million new mobile users over the last four years.

Reliance Industries Ltd (RIL) plans to roll out its 4G network in partnership with Himachal Futuristic Communications Ltd (HFCL), the group from which it acquired pan-India airwaves for high-speed internet and data services. Currently, the management of networks of India's big telcos - Bharti Airtel, Reliance Communications, Vodafone, Tata Tele and Idea - are all outsourced to either Ericsson, Nokia Siemens, Huawei or Alcatel-Lucent. In 2009, Bharti Airtel, which had made outsourcing a key plank of its business strategy, awarded a contract to Franco-American telecom gear maker Alcatel-Lucent to enhance and maintain its 80,000 km-plus inter-city optic fibre cable network. Alcatel-Lucent also took on over 4,000 Bharti employees who handled its landline and fibre optic business on its roles. HFCL is likely to perform a similar role for RIL and build a pan-India optic fibre network to carry Infotel's data traffic.

Reliance-ADAG partnership? Reliance-Bharti partnership? RJio has signed agreements with Anil Ambani's Reliance Communications (RCom) for using its inter-city fibre optic network. As per the agreement, RJio would use RCom's multiple fiber pairs spread over 1.2 lakh km across the country for providing backbone to roll out its 4G services. RCom will in turn have reciprocal access to optic fibre infrastructure to be built by RJio in the future. RJio agreed to pay about Rs1,200 crore to RCom as one time indefeasible right to use (IRU) fees for sharing the fibre optic network 65% Anil Ambani owned and Managed Reliance Communications is under Deep Trouble with debt levels continuing to be high (net debt to EBITDA of more than 5x) despite consistent free cash flow generation. RCom is continuously losing market share (both subscriber and revenue). Even on active subscriber basis your market share has moderated over the last 2-3 years. In the last several months, CDMA active subscriber addition has been very weak compared to GSM additions. Also, muted interest in 800 MHz spectrum suggests low expectations from CDMA. RCom has reconfigured CDMA network to offer High Speed broadband using the EVDO Rev A/B technology and has gained traction but has no blueprint on further CDMA business as spectrum in the 800MHz gets expensive. RCom does not have 4G spectrum, while competitors have already started rolling-out 4G services. Reliance Industries' telecom arm will use Bharti Airtel's submarine cable network to provide data connectivity across Asia Pacific. Bharti Airtel Ltd, a leading global telecom services provider with operations in 20 countries across Asia and Africa, and Reliance Jio Infocomm Ltd have signed a Rs 1,200 crore, Indefeasible Right to Use (IRU) Agreement, under which Bharti will provide Reliance Jio data capacity on its i2i submarine cable. Reliance has rather smartly decided to partner a rival because this partnership offers value. No other operator in

India can offer the Singapore connectivity which Bharti can since no one else has that infrastructure. So while for domestic connectivity RIL has buried years of rivalry with brother Anil's Reliance Communications, it has shaken hands with Sunil Mittal for this deal. Bharti's cable network consists of eight fibre cable pairs and Reliance Jio will utilize one dedicated pair capable of multiple terabits of capacity. While Reliance has already been assigned the 10,000 mobile numbers it needs to test its 4G services on anon-chargeable basis, it has also been assigned 4,000 numbers in Delhi and Mumbai, where it plans on launching its services first. According to Reuters, The high speed link will enable Reliance Jio to extend its network and service reach to customers across Asia Pacific region. It will also connect Reliance Jio directly to the world's major business hubs and ISPs, enabling the operator to meet the bandwidth demand and provide ultra fast data experience to its customers. *The deal marks Reliance Jio's continued efforts to rapidly grow and expand both its international and domestic network and infrastructure by building an ecosystem with multiple carriers and service providers. The i2i cable's landing points are at Chennai in India and Tuas in Singapore. It includes ownership of i2i submarine cable system connecting Chennai to Singapore, consortium ownership of SMW4 submarine cable system connecting Chennai and Mumbai to Singapore and Europe, and new cable system investments like Asia America Gateway (AAG), India Middle East & Western Europe (IMEWE), Unity, EIG (Europe India Gateway) and East Africa Submarine System (EASSy). It also has terrestrial express connectivity to neighbouring countries including Nepal, Pakistan, Bhutan and China. Reliance Communication stock fell 5.46 percent after the Bharti-Reliance Industries deal was announced because the tie-up with Bharti means Reliance is open to players other than Reliance Comm as well, which decreases the probability of further deals between Reliance Communications and Reliance Industries. RJio will be investing INR 500 billion in its LTE network in India and is partnering with various players to develop a conducive ecosystem for its offerings. Besides, the company is preparing for the launch of services by handing over the equipment deal to Samsung for Mumbai and Delhi. It has also hired SAP AG (NYSE/Frankfurt: SAP) for billing solutions. It has brought Ericsson on board as their WiFi partner. Reliance Jio has partnered with SPIRIT DSP to offer voice and video calls over its LTE network across the country.

**The Road Ahead:**

Bharti Airtel has taken the lead by launching the country's first 4G services in May 2012 in Bangalore and Kolkata and has presence in six other major circles, including Delhi and

Mumbai. Fourth-generation, or 4G, networks will offer internet and data services at much faster speeds compared with existing 3G services. AT&T, Inc. (T) is planning another attempt to re-enter the Indian telecom industry by buying out a 25% stake in Indian billionaire, Mukesh Ambani's venture, Reliance Jio Infocomm Ltd. According to Bloomberg, AT&T's planned buyout for approximately $3.5 billion will represent the largest foreign direct investment in that country. This would bring Reliance Jio's market value to approximately $14 billion. AT&T's strategic move in the Indian market remains consistent with its Project Velocity-IP plans launched in Nov 2012, to invest approximately $14 billion. Given the competitive market conditions and saturation in the U.S. wireless industry, AT&T seeks a greener pasture by expanding wings in the Asian markets. This is not the first time that AT&T has forayed into the Indian sub-continent. Previously, it owned one-third equity in a telecom joint venture (now known as Idea Cellular) formed by the company and Indian corporate giants Tata Group and Aditya Birla Group. However, in 2004, AT&T exited the market by selling its 32.9% stake to the remaining stakeholders. It has been three years since RIL made a re entry in telecom sector with a big bang. However, industry is still awaiting its launch of 4G services. "Our impatience to reach our goal demands a sense of urgency, but not careless haste."- Mukesh Ambani, RIL CMD. According to the RIL CMD his 4G telecom services would be pillared on "affordability and providing an unparalleled range of services that do not exist today." "In the coming years RJio's next generation digital infra and services platform will catalyze a transformation and will embrace almost every facet of India's economic growth and social progress." As per TRAI, two associated aspects for market growth are availability of spectrum and availability of resources for network rollout and expansion. RJio has successfully worked out in these areas to make its re entry in Telecom sector sustainable. Looking back at RJio's decision for Re entry in 2010, it has been taking very planned and cautious decisions before putting a step forward. Journey so far has been meticulous and it will be interesting to watch for the future strategies. Will RJio be able to recreate the magical success of Reliance Infocomm?

**Predatory pricing or Behaviour?**

The traditional theory of predatory pricing is straightforward. The predator, already a dominant firm, sets its prices so low for a sufficient period of time that its competitors leave the market and others are deterred from entering. Assuming that the predator and its victims are equally efficient firms, this implies that the predator as well as its victims has incurred losses and that these losses are significant. For the predation to be rational, there must be some

expectation that these present losses (or foregone profits), like any investment, will be made up by future gains. This in turn implies that the firm has some reasonable expectation of gaining exploitable market power following the predatory episode, and that profits of this later period will be sufficiently great to warrant incurring present losses or foregoing present profits. The theory also implies that some method exists for the predator to outlast its victim(s), whether through greater cash reserves, better financing or cross-subsidisation from other markets or other products.

Some use the phrase "predatory pricing" and "penetration pricing" interchangeably. Penetration pricing is the practice of charging a low price in order to quickly gain market share, especially when a new entrant or existing incumbent tries to scare the competition away and gain market share.

**Anti-Competitive Behaviour:**

In order to determine whether RJio's behavior has been predatory and /or anti competitive, a close examination is required of the telecom industry's market structure, spectrum auctions and regulatory changes, besides the pricing of Rjio's products and services and issues related to interconnection charges and point of interconnection.

**Table 1: Comparing Five Incumbent Telecom Operators**

| Variable | Bharti Airtel | Idea Cellular | Vodafone India | Reliance Communications | Aircel |
|---|---|---|---|---|---|
| Revenue market share (RMS) | 32.7% | 19.2% | 23.2% | 3.6% (Q4FY16) | 5.3% (Q4FY16) |
| Subscriber base (million) | 294 | 175 | 198 | 100 | 65.1 |
| Wireless subscriber base | 24.7% | 17.03% | 19.26% | 9.54% | 8.59% |
| Data revenues (as a % of total) | 23.7% | 20.6% | 18.57% | 31.8% | 20% |
| 3G users (million) | 28.1 | 30.5 | 27.8 (4G Included) | 25.4 (4G Included) | |
| 4G users (million) | 5 | 1.8 | | | |

Source: TRAI (2016b); Srivastava (2016); Anand (2016); ICRA (2016); authors' calculations based on Q1FY17 and FY15-16 results published by Bharti Airtel, Idea Cellular, Vodafone India and Reliance Communications.

Table 1 shows that Bharti, Idea and Vodafone together account for 75.2% o the market in terms of revenue and 61% in terms of subscribers. There are 220 million active unique smartphone users in India (Hindu 2016), making the country the second largest market in respect to smartphone.

**CONCLUSION**

Using revenue market share and subscription based figures as a method to understand market leader.RJio cannot at present be classified as market leader. As per the provisions of the Competition Act, RJio cannot be said to be involved in predatory pricing. However RJio's behavior and the manner of its entry into the telecommunications industry may certainly be considered as predatory.

**Questions for discussion:**

1.  Discuss the reasons for which RJio's behavior considered to be predatory.

    One, the manner in which BWA/$G spectrum in 2010 has been acquired and the fact that it doubly benefitted when the government changed the rules to allow operators to provide voice calls and data services on the same spectrum.

    Two, RJio has also benefitted from adopting unfair cost advantage as the spectrum usage charges (SUC) have not changed and is not in line with the SUC paid by other telecom operators on their respective 2G, 3G and 4G technology platforms.

    Three, the timing and sequence of the events relating to probable regulatory changes in the interconnect usage charges (IUC) regime indicates that RJio is at the right time at the right time.

2.  Do you think the industry is healthy enough to bid aggressively and buy?

    The industry has been making profit,ebitda margin has been improving, many of them have brought in fresh equity to boost capacity of the industry to raise money is better than what it was three years back.

3.  According to you, what choices for operators considering the present competition?

    One, with the variety and the volume of spectrum that we are auctioning, operators have a huge choice. They can fill up their gaps of data or voice spectrum, be it 2G, 3G and 4G. Whatever they need, they get it.

    Two, yes it is priced high,but this is the best quality spectrum that can have in the entire communication space. Anyone who deploys network in this spectrum saves a lot of money on capex. It is value for money for bidders even at this price.

    Three, the onus should be on the operators to make investments and improve the quality of services both coverage and capacity.

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# Keynote address

# Implementation of task-centric holistic agile approach on teaching cyber physical systems engineering and distributed software development

by

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## ABSTRACT

Engineers of today increasingly need to possess both technical and social skills to run engineering projects successfully. Having technical skills solely is not enough since engineering projects mostly fail because of lacking social skills of project members. At the same time, the engineers are increasingly required to have various technical skills because the products they design and construct are getting more complex having hardware, software and some kinds of communication mechanism with the surrounding world integrated in a single product. To be prepared for their future work as an engineer, engineering students need to get an opportunity to gather experience in projects in which they face with realistic project situations. In this paper we describe a novel task-centric holistic agile approach on teaching engineering subjects in realistic up-to-date industry-like scenario. We present the implementation of the concept and discuss the results based on the students' feedback.

## BACKGROUND

Cyber Physical Systems (CPS) are increasingly impacting our every-day life providing systems and systems of systems to such domains as transportation, health care, manufacturing, logistics, and electrical power generation. Smart car, smart city, smart home, smart factory, and smart grid – a lot of systems and things in our life are getting more and more intelligent. Moreover, they are communicating and collaborating with each other. The concepts of CPS stand behind all these examples. To develop such systems, the industry demands highly-qualified and skilled employees possessing broad background knowledge of multiple fields of proficiency, amongst others excellent soft skills.

According to the report [2], CPS involves topics from multiple different engineering disciplines. Hence, the engineers and specialists of CPS development teams have usually miscellaneous backgrounds. To work effectively, the team members need to have strong competences in diverse domains including knowledge, technical skills, and soft skills. These competences are applied on the one hand for the internal team communication, and on the other hand for communication with non-technical customers to understand their needs. In the era of globalization and increasing system complexity more and more products are developed in globally distributed teams. In such global teams soft skills are especially asked to cope with the design and development process. Thus, as mentioned in [2], social skills such as strong technical writing skills, presentation and other communication skills are seen as essential, too. Besides the communication oriented soft skills, the engineers should understand the need of lifelong learning especially because of the frequent technological innovations.

The variety of the challenges in development of CPS, especially within the context of the global markets, emphasizes a responsible mission of the teaching CPS engineering. To meet the challenges facing the teaching of CPS, the task-centric holistic agile approach on teaching CPS engineering was described in detail in [1]. The central element in the methodology is a task to be solved focusing on the core ideas and principals of CPS. Within this task, the students should learn development of CPS by practical doing. In the devised task robots shall transport building blocks from one palette onto another palette. Two intermediate operations shall be performed with the building blocks: cleaning and painting. Beside the task the proposed methodology combines five teaching methods: perceptional, project-based, problem-based, face-to-face, and research orientated that may be used when needed, in agile way.


**Concept of Task-centric Holistic Agile Teaching Approach**

The agility is the fundamental idea of the task centric holistic agile teaching approach. The "agile" is defined such that it copes "with changing and diverse learning needs" and "with changing research, business, and technology environments" [8]. Using this methodology the tutor may change the current teaching approach depending on the students' needs and on the topic.

The task that needs to be solved has a central position in the methodology of the task-centric holistic agile teaching approach. The teaching process is organized around the task. The task's difficulty degree needs to be set such that it is not too easy or not too difficult to solve. It

should be challenging and interesting to motivate the students to solve it. For students in advanced levels we also recommend to combine the task with an up-to-date research question.

The methodology consists of five different teaching methods that may be varied during the teaching process that we describe here shortly.

- The project-based teaching ([10], [13]) is a model that organizes learning around projects. The central element of the holistic approach is the task that is organized as a project.

- Problem-based teaching ([10], [12], [14]) is defined as "an instructional (and curricular) learner-centered approach that empowers learners to conduct research, integrate theory and practice, and apply knowledge and skills to develop a viable solution to defined problem." The task is constructed so that the students face with problems that they need to solve.

- In research orientated teaching [9] the curriculum emphasizes teaching process of knowledge construction in the subject. Characteristic for research orientated teaching is that it is teacher-focused and emphasis on research process and problems.

- Under the face-to-face teaching [11] we understand the traditional teaching in which the teacher is the controller of the learning environment and in which the teacher causes learning to occur [15]. The teaching approach is switched into this form when needed - e.g. in a form of short input presentations in which relevant topics are presented to provide the context and motivation for a topic.

- Perceptional teaching [7] is based on the idea that perception plays a fundamental role in all learning. Understanding the principles of concept formation forms an essential basis for teaching. Concept formation is essentially based on the perception of empirical meanings of concepts.

In the following section we describe the implementation of the task-centric holistic agile teaching approach.

## IMPLEMENTATION

To validate our task-centric holistic agile approach, we implemented a course in teaching CPS that takes place within the scope of cooperation between University of Applied Sciences Emden / Leer, Germany and ITMO-University St. Petersburg, Russia. This course is running in the winter semester 2016/2017. The course members are seven German students studying

computer science and nine Russian students studying instrumentation and control engineering. Tutors from the German as well as from the Russian site supervise the course.

In this paper we describe how we establish and carry out this cooperative course. We also analyze the results obtained. We organized this course as a project-based education. The objective of the project is to design, develop and validate a CPS within a globally distributed multicultural project team. According to [3], the success of technology-intensive projects depends on soft skills of the project members. Especially in global teams, such factors as internal project communication and collaboration play after technical skills and competences a significant role for the project success. Hence, as a first step of this cooperative course evolving and strengthening the soft skills of the participating students was considered. We planned and prepared a workshop that should be conducted for all course participants giving a start to our cooperative project.

The workshop addressed four critical objectives. The first one was that the students from both countries have got know each other well and have established personal contacts. Parallel to this the students should be confronted with a concrete task in the field of CPS. Through a critical approach to the subject and teamwork they should develop a deep understanding of it. Additionally, a target was set that the students got background knowledge in the areas of CPS technology, global software engineering, and project management through multiple short face-to-face teaching sessions. Finally, they should carry out the draft planning of the project and allocate their roles within it, as well. Thus, at the end of this workshop the students should get a good start for further project work. We devised our workshop due to these objectives and based on the five teaching methods [1].

The schedule of the first day was thoroughly planned. It contained several phases that vary in the course of the day, e.g. keynote speeches, workouts in groups and in plenum, and communication games. The objectives of this day were on the one hand to develop soft skills and facilitate communication within the project team and on the other hand to confront the students with the task and some theoretical backgrounds. The schedule of the second and third days was planned not so strictly as those of the first day. The main objective of the second day was that the students would learn multi-agent systems and JADE framework [4] used for development of such systems. In teams they would try to implement some trivial agents for our task. At the third day it was planned that the students would learn how ontology is used for communication among agents and they would construct a specific ontology used by robots in our task. Furthermore the overall system architecture and various use cases should be elaborated

in small groups. The important issue of the third day should be motivation of the students to plan their future work within the project. The single tasks should be identified and ideas for group formation should be collected. For the fourth day no exact schedule was planned. The tutors should provide clear targets and allow the students sufficient freedom to reach them. The students would plan their future project work forming the sub-teams, identifying the single tasks and mapping them to the sub-teams.

A face-to-face kick-off-meeting took place from September 5, 2016 till September 8, 2016 at ITMO University and was conducted as scheduled with some insignificant modifications in respect of timetable. The objectives set for the workshop were reached, thus the workshop was a success.

After the kick-off-meeting the students were geographically separated forming two main teams, a German and a Russian one, and immediately continued the project work. Because of the personal contacts among project members and a trustful and friendly atmosphere within and between the both main teams, collaborative project work achieved significant progress thereafter.

## RESULTS

During the workshop the students were requested to give written feedback. In the first step, the students were asked to estimate in a name up to three things, they have learned in that day. In the second step, the students were asked to estimate in the scale "agree, tend to agree, neutral, tend to disagree, disagree" whether they understand the relevance of that day's topics to the primary objectives of the course. Based on this data, we analyzed the impact of our course on the learning success of the students. The main thing the students mentioned they have learned is that communication is the key success factor of a project and that it is very complex. The students comprehended that each project member understood the presented stuff in a different way. They recognized that to gain the same awareness of a task or a problem needed considerable efforts of every participant. The students also mentioned that the project language English being a foreign language for all project members made communication more complicated. The workshop aroused students' creativity. E.g. they invented a role game to get the common understanding of the CPS task. Some students mentioned that they have learned some new engineering topics, e.g. CPS, Internet of Things, the development framework JADE [4], the development process Scrum [5] as well as various tools, e.g. Eclipse [6]. From the

students' answers we can conclude that at the end of the third workshop day they actively took the responsibility for the project. They were concerned about rough work packages, forming project sub-teams responsible for these packages, the organization of project work, using tools, and so on.

Table 1 depicts the distribution of responses to the second question:

| Day | agree | tend to agree | neutral | tend to disagree | Disagree |
|-----|-------|---------------|---------|------------------|----------|
| 1 | 11 | 5 | 0 | 0 | 0 |
| 2 | 11 | 1 | 0 | 0 | 0 |
| 3 | 9 | 2 | 1 | 0 | 0 |
| 4 | 8 | 2 | 1 | 0 | 0 |

Table 1 Results of the students' feedback

For the second question the positive responds such as "agree" and "tend to agree" prevailed. However, the total number of feedback sheets had been reduced during the workshop beginning with 16 and ending with 11. Not all students filled in their feedback sheets to the last three workshop days, so their responds remained unknown. It can be noticed yet that the number of "agree"-answers has been reducing and of "neutral"-answers increasing in the course of the workshop. Thus, only half of the all students responded as "agree" to the last day. The lessening satisfaction can be explained by the fact that the students worked at the last workshop day autonomously organizing the future project work, allocating project roles and defining project tasks. Some students perhaps did not manage to insist on their ideas or could not even voice them. Those quiet students remained then unhappy. To improve the situation for the future a tutor can function actively as a moderator and steer the discussion so that quiet participants as well as more outspoken ones contribute with their opinions.

**DISCUSSION AND OUTLOOK**

Our collaborative CPS course is an on-going project. The Russian and German students, even though geographically separated, are working together on the project task designing and

developing the CPS system. As a software development process model they use the agile process framework in an iterative way. Having started with the implementation of some simple skills of the robots, the students are continuously extending the functionality of the system.

To measure the impact of our course on the learning success and progress of the students, we devised a questionnaire containing questions on the feelings produced by our course. This questionnaire is based on self-reflection and self-esteem of the students and reflection on work of the team. We carried out a survey immediately after the kick-off meeting. The very same questions will be made at the end of the course. Analyzing these data will give us an objective evaluation of the students' satisfaction with the course.

As the next step in our research we are planning to generalize our task-centric holistic agile approach that was initially planned teaching of CPS engineering solely in teaching of other engineering disciplines, too.

**Keywords:** Agile teaching, Cyber-Physical Systems, Education of Cyber-Physical Systems Engineering, Education of Global Software Engineering, Perceptional teaching, Problem-based teaching, Project-based teaching, Research orientated teaching.

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# Session:

## ICT Management

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# Promethee use in personnel selection use in personnel selection use in personnel selection use in personnel selection use in personnel selection

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## ABSTRACT

An important phase of human resource management is personnel selection, which is concerned with identifying an individual from a pool of candidates suitable for a vacant position. As in many decision problems, personnel selection problem is very complex in real life. Recruitment and selection of competent personnel are essential for the ongoing success of any project based organization (PBO). The key issue for decision making in personnel recruitment is selection of the right person to the right job. Although both are closely interrelated parts of a multistage decision process, recruiting activities generate applicants for jobs, and selection decisions must then be made that attempt to choose the subset of applicants, or the applicant, most likely to succeed. Some of the techniques in decision making are multi criteria decision making (MCDM) can be used for personnel selection process. The main objective of this study is to develop a model based on PROMETHEE (Preference Ranking Organization Method for Enrichment Evaluation) method for ranking personnel selection criteria. In this study, a decision making methodology is designed that employs PROMETHEE in order to help the personnel selection process. In this respect, the aim of using the PROMETHEE technique is taken into account to assess and rank the importance of criteria.

**Keywords:** Personnel selection criteria; PROMETHEE, Decision making, Project Based Organization (PBO); Razavi Hospital.

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## INTRODUCTION

As in many decision problems, personnel selection problem is very complex in real life. Multicriteria decision making (MCDM) has been widely used to deal with decision-making problems involving multiple criteria selection of alternatives. To manage this personnel selection problem, the PROMETHEE method has been used in MCDM on personnel selection problems, in which qualitative information is traditionally transformed to numerical one using an ordinal scale. Chen et al. (P.-C. Chen, 2009) for personnel selection used fuzzy linguistic PROMETHEE method. They used crisp value and linguistic value together for alternative evaluation. In a group decision making environment they show validity of their model with a numerical example for marketing manager selection. They considered English ability and experience as two quantity criteria, and market ability and communication ability as two quality criteria. Various methods have been proposed to decide on the selection of human resources. Liang and Wang (1992) presented a model by using concepts of fuzzy set theory assess personnel fitness and job vacation. On the other hand, fuzzy sets decision theory suggested with Miller and Feinzig (1993) for the personnel selection problem. Liang and Wang (1994) developed a fuzzy MCDM methodology to find the final ranking values for candidates in personnel selection problem. Yaakob and Kawata (1999) used fuzzy methodology for solving workers' placement problem. Lovrich (2000) used fuzzy linguistic model for personnel selection. Capaldo and Zollo (2001) presented a model based on a case study in FIAT Research Centre (CRF) that is a major Italian company. Butkiewicz (2002) used fuzzy numbers for staff selection. Chen and Cheng (2005) combined Group decision support system (GDSS) with MCDM in fuzzy environment to solve the personnel selection problem. Golec and Kahya (2007) developed a hierarchical structure and use a fuzzy model for personnel selection. In current study, personnel selection problem is considered as a multi criteria group decision making problem. According to the objectives of this study, the suggested methodology must have some characteristics:

1. It should be able to elicit and aggregate relevant experts' opinion about the hierarchical structure consist of criteria and sub criteria with a systematic criteria selection method.

2. It should be able to find criteria importance and candidates rating by effective using numeric terms in a group environment based on decision making preferences. Then must this results combined together for final ranking. In this section of study, a committee was formed as decision makers for evaluating criteria weights. This committee outlined the importance of criteria for this job position by using numerical terms. Then, it was necessary that the

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numeric terms to be transferred to Visual PROMETHEE. The results from software were used for ranking criteria. After reporting the case study results, a discussion was done. Comments are related to innovations of the methodology. The advantages and superiority of the proposed approach versus previous methods, was shown in the discussion section. The discussion showed that PROMETHEE method may play an important role in the analysis and in the final decision procedure.

The PROMETHEE methodology seems to be completely adequate to personnel selection problems because it models preferences within its procedures in a simple and flexible manner. Also, it is perfectly intelligible for decision makers since it represents one of the most intuitive Multicriteria decision methods. Therefore, it is chosen for the enhancement towards the evaluation of criteria and weights. In this paper, a decision making methodology is designed that employs PROMETHEE in order to help the personnel selection process. In this respect, the aim of using the PROMETHEE technique is taken into account to assess and rank the importance of criteria. Finally, an application in a project based organization (PBO) demonstrates the effectiveness of the proposed methodology. This study discusses the personnel selection procedure and how determining criteria importance by using PROMETHEE. A case study used to validate this model and analyses the results of the validation. The case study is an in depth application of proposed methodology to assist in selecting project manager for an Iranian company. Results from case study will be presented as step by step.

## MATERIAL AND METHOD

In a single-level analysis of pairwise fuzzy group decision making, each decision maker expresses his or her evaluation on each pair of alternatives based on whole criteria or based on each criterion when the criteria are considered explicitly. In the explicit criteria consideration, solutions based on each criterion are then aggregated into the final solution. The criteria may have the same or different weights. The weight for each criterion is determined separately based on the decision makers' consensus or by adjusting a decision parameter for the aggregation operator used. In most cases, the consensus is achieved by changing the weights of the decision makers (Lee, 2002). In the other type, the decision makers are encouraged to modify their opinion to reach a closer agreement in opinions (Hsu & Chen, 1996). Also, fuzzy sets are employed to recognize the selection criteria as linguistic variables rather than numerical ones.

The AHP is used to determine the weights of the selection criteria, in accordance with their relative importance. By the importance roles of decision makers, there are heterogeneous and homogenous group decision making. Heterogeneous group decision making environment allows the opinions of individuals to have different weights, while homogenous not. Dubios and Prade (1979) pointed out that each individual is viewed as a subgroup, where the weight of an individual reflects the relative size of the subgroup, and reflect the relevance of the individual in the group.

Information regarding the relative importance of each criterion is required for all methods and MCDM problems. The decision maker directly can be assigned the weight. Some other methods such as the weighted least square method also can be used for weighting. A set of weights can be consisted of the numeric forms or linguistic forms. If a decision maker cannot assign weight in the numeric form, then the traditional crisp MCDM methods will be unable for decision making. The mission of the weighting is to give relative weights to all evaluation criteria. In this step, each decision maker should assign criteria weights that mean the importance of each criterion based on the position to be filled. Each decision maker use numbers, based on the requirements of job position. For example, "In my opinion for a project manager, ability in working with computer is very important, so I give it 8 point". In this sentence "ability in working with computer" is criterion and "8" is criterion weight. It must be considering that in group decision making, it is not uncommon that two decision makers have conflicting views on the importance of a criterion. One decision maker considering it is very important while the other decision maker does not and he or she believed it is fair.

The goal of this study is the criteria evaluation based on PROMETHEE modeling for determining the weights of criteria. The basic elements of the PROMETHEE method have been first introduced by Professor Jean-Pierre Brans in 1982 (Figueira, Greco, & Ehrgott, 2005). This descriptive approach, allows the decision maker to visualize the main features of a decision problem: he/she is able to easily identify conflicts or synergies between criteria, to identify clusters of actions and to highlight remarkable performances. The prescriptive approach, named PROMETHEE (Mareschal, Brans, & Vincke, 1984), provides the decision maker with both complete and partial rankings of the actions. PROMETHEE has successfully been used in many decision making contexts worldwide. A non-exhaustive list of scientific publications about extensions, applications and discussions related to the PROMETHEE methods (Behzadian, Kazemzadeh, Albadvi, & Aghdasi, 2010) was published in 2010.

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From the decision science point of view, many scholars have dealt with the personnel selection problem (**Afshari**, 2014). To handle this decision making problem, they combined techniques from operational research with artificial intelligence fields. Expert systems, fuzzy linguistic variables, neural networks and multi criteria decision making techniques used as methodology. Chen et al. (2009) for personnel selection used fuzzy linguistic PROMETHEE (Preference Ranking Organization Method for Enrichment Evaluation) method. They used crisp value and linguistic value together for alternative evaluation. In a group decision making environment they show validity of their model with a numerical example for marketing manager selection. They considered English ability and experience as two quantity criteria, and market ability and communication ability as two quality criteria.

This part of the study uses the PROMETHEE in the group decision making environment. Visual PROMETHEE is the software implementation of the PROMETHEE methods. Visual PROMETHEE is developed by VP Solutions under the supervision of Professor Bertrand from the Solvay Brussels School of Economics and Management. Professor Bertrand has been developing and applying the PROMETHEE and GAIA methods for 30 years together with Professor Jean-Pierre Brans in Brussels. With Visual PROMETHEE you can share the expertise of a worldwide expert in the field of Multi criteria decision making and of one of the original authors of the PROMETHEE and GAIA methods. The purpose of this model is to enhance group agreement on the group decision making outcome by considering group decision making. Once the hierarchy is structured, the next stage is to establish the importance of each criterion and also to evaluate candidates based on the hierarchy.

**CASE STUDY**

To validate model, a case study was conducted in an Iranian company. MAPNA is a project based organization and engaged in development and implementation of power, oil & gas, railway transportation and other industrial projects. It has 371 employees and located in Tehran. 14 persons in this company have been able to obtain international certificate in Professional Project Management (PMP). From 1992, MAPNA has been involved in more than 85 projects valuing over 17 billion euro. When MAPNA Company wants to hire a project manager, the problem begins. A most appropriate candidate for the post of project manager must choose among a numbers of candidates. The decision was normally based on his/ her experience. There are number of criteria that should be incorporated into the decision, to ensure

that sound judgment can be made based on the criterion considerations. Based on this problem, the proposed system must have the capability to evaluate all the criteria that affect the selection of the project manager and stress the intuitive judgment in the decision making process. By considering that MAPNA is a project based company, the selecting project manager is a critical task for this company. Usually this selection is not done by a single person and a group of persons participate in the process. Usually, the group of decision makers consists of decision makers from different organizational departments and high level managers. In order to determine which applicant is best for the job position from candidates, three decision makers are invited. For more convenience, $D=\{DM_1, DM_2, DM_3\}$ is considered as the decision maker set. The committee was formed for evaluation of candidates and consists of three persons, executive deputy of MAPNA Company (DM1), and procurement deputy (DM2) and the administrative and financial deputy (DM3). It is necessary that to define the importance for each criterion by each of decision makers. The followings are some definition of the criteria found in previous research studies and literature:

**Education:** Academic achievement always provides a platform for measurement in candidates' selection process. It can give an overview of candidate's talents and performance.

**Experience:** Job experience reviews the candidate jobs background and this may help candidates to perform well in his works. Job background may have made candidates familiar with working environment and the skills and method needed to improve their performance.

**Computer Knowledge:** Explanation: Computer skills involve the ability of the project manager to use related software to project management.

The purpose of this case study was to capture the decision maker's knowledge and experience for project manager's selection criteria to identify the weight that should be considered in project manager selection process. Findings from this survey, will provide an even more structured approach and assist in formulating guidelines for selection of a project manager in MAPNA as a project based company. The proposed framework was applied to this project based organization to see the benefits of this method. They gave some values (between 1 and 10) as shown in Table 1. The most important criteria will have been the nearest value to ten. The status and effects of the experts were taken into account to determine the weights of each expert, which is shown in Table 2:

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**Table 2.** The determined attribute weights for the Decision Lab software matrix
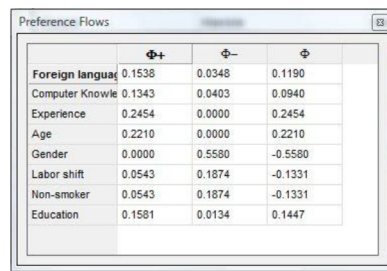
|  | DM 1 | DM 2 | DM 3 |
|---|---|---|---|
| Foreign Language | 9 | 8 | 7 |
| Computer Knowledge | 7 | 9 | 9 |
| Experience | 10 | 10 | 10 |
| Age | 10 | 9 | 10 |
| Gender | 3 | 1 | 2 |
| Labor Shift | 3 | 7 | 9 |
| Non-Smoker | 3 | 7 | 9 |
| Education | 9 | 8 | 8 |
|  |  |  |  |
| Weights of the Experts | 0.55 | 0.40 | 0.35 |

Therefore, three decision makers DM1, DM2 and DM3 evaluate each candidate. Decision makers have weights 0.55, 0.40, and 0.35. Decision Lab 2000 software is used to get a PROMETHEE ranking. The given values to the criteria will be entered to the Decision Lab 2000 software and the same table as on Table 2 is made up as shown in the Figure 2.



**Figure 1: A screenshot from Decision Lab software**

The criteria are then maximized since the highest number means the best value in this ranking. The criteria, defined functions, function parameters and the weights assigned to each expert is as seen in the Figure 2. All data entered into the program and calculated. As a result of calculations, the positive ($\Phi$+), negative ($\Phi$-) advantages and the net ($\Phi$) advantages are streams of preferences are obtained as in Figure 3.

**Figure 2: A screenshot of the preference flows from Decision Lab**

After obtaining the preference flows, the partial ranking by using PROMETHEE I will be shown in Figure 4. It shows both positive (Φ+) and negative (Φ-) values and rankings for each criterion. However, it does not compare the conflicting actions.
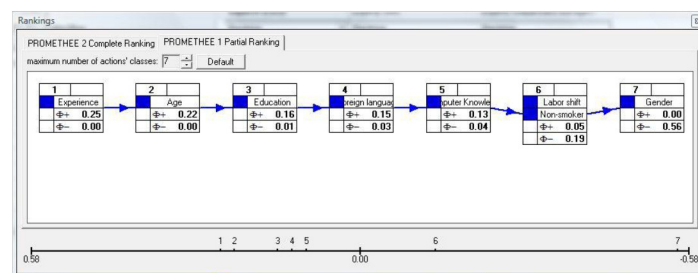


**Figure 3: PROMETHEE I ranking**

The PROMETHEE II (complete) ranking is shown in Figure 4. These are the net (Φ) values which positive values are subtracted from negative ones. (Φ= (Φ+)-(Φ-))
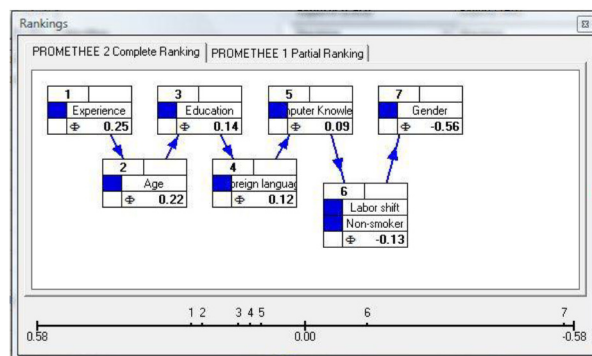


**Figure 4: PROMETHEE II ranking**

After all of these, the net flow values, from the preference flows table (Figure 5), are normalized and the important criteria are determined. The negative Φ- values (gender, labor shift, being non-smoker) are negligible and thereby they are ignored for calculation. The normalized attribute values are shown in Table 3.

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**Table 3.** Normalized attribute weights

| | |
|---|---|
| **Foreign Language** | **0.14** |
| **Computer Knowledge** | **0.11** |
| **Experience** | **0.30** |
| **Age** | **0.27** |
| **Education** | **0.18** |

This model based on the PROMETHEE method and the use of numeric terms by the decision makers, facilitates the evaluation stage. Numeric terms are used by decision makers in this study, since they could easily be used to describe the subjective measurement of the ratings of candidates and the criteria importance. In this case study, discussion with the decision makers that used numeric terms for candidate evaluation indicated that they found numeric terms very helpful. With numeric terms, they reached to a smooth agreement among candidates and there is no need to directly decide on the weights for criteria and rates for candidates, and only they expressed their preference by using numbers. Also, in today's participatory style organizations, a single decision maker cannot be responsible for selecting the best candidate. A group decides in this case, and the model must be combined group rating and importance to a single ranking for candidates.

**CONCLUSION**

This study has clearly demonstrated that personnel selection can be improved in several ways by implementing the PROMETHEE method. Decision makers can evaluate personnel selection criteria based on their own numeric terms. Personnel selection is a complex decision-making problem. It handles a large amount of data, which can come from quantitative and qualitative sources alike and so it would be useful to develop suitable decision-making methods to facilitate the personnel selection procedure. PROMETHEE method was used for multi criteria project manager selection procedure and a framework was presented. In the framework, some respected criteria were graded by 3 different authorized people in an PBO. The matching score of each criterion is determined, which is used as the evaluation for that selection, and ranked through PROMETHEE method. The framework is presented with a real-case study by the participation of a PBO and as a consequence positive feedbacks were taken from the firm.

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As this study has certain limitations, it is also implied in one way or another that further research could still be conducted to overcome such limitations. Throughout the development of this methodology framework, several interesting questions and challenges that could be explored in the future studies have also opened. A number of potential extensions for further research can be explained. First, there are other computing approaches such as artificial neural networks and genetic algorithms and fuzzy rule based modeling. In this methodology PROMETHEE method participated for evaluating criteria weights. In further works may be researcher provides another effective mechanism in modeling the decision maker's preference and to effectively handle the imprecision of the human decision making process in personnel selection problem. Second, according to popularity and the availability of the Internet, researchers must develop a decision support system (DSS) in order to solve the personnel selection procedure in the Internet environment. The use of World Wide Web infrastructure is one part of this study, and a client/server computing architecture is another part of this model. Third, sometimes in the real world, in a group of decision makers, there is a condition that every decision maker has a different weight in decision. The current methodology must be able to solve these types of problems. Forth, because in the real world there are crisp and fuzzy data together, it is recommended that these methods develop in the state variables containing both crisp and fuzzy data. Fifth, in other areas of decision making problems, the methodology that is presented in this study can also be applied and compared with other methods. Decision problems such as material selection, project selection, and strategy selection problems can be put in this set.

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# A model of client maturity assessment
# for IT projects

by

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## ABSTRACT

Based on qualitative research, the article aims to present an application of a universal research scheme enabling the client type identification in the IT sector. This kind of assessment should constitute an idispensable stage in the process of selecting a suitable IT project implementation methodology – one that will prove effective for cooperating with a particular type of client. Unfortunately, this approach has been neglected in both the reference literature and business reality. Instead, the main emphasis is put on IT project-related methodologies and tools as such. The suggested scheme, with its workflow, methods and tools, results from the author's earlier research work as well as her seasoned knowledge and expertise in project management, IT and psychology. The paper is an account of the first stage of the study of an effective model of client cooperation within IT projects.

**Keywords: IT project management, project management methodologies, identifying client's needs, qualitative research in managament**

## INTRODUCTION

The last ten years have seen a significant growth of interest in IT project management [Huemann, Turner, Keegan, 2004; Flasiński 2006]. The number of executed IT projects is on the increase [The Standish Group, 2011; The Standish Group, 2014; PMR, 2011; PMR, 2014]. Consequently, also the number of studies concerning this domain is rising, with most of them focusing only on technical aspects and the project implementation methodology applied [Pinto, Kharbanda 1995; Olsen 2001, Phillips 2004; Rosen, 2004]. It is also mainly the hard aspects (procedures, techniques) that are addressed in course books and repositories developed by leading international organizations (PMI - Project Management Institute, IPMA - International Project Management Association) which set project management standards, among other objectives [Project Management Institute 2004].

Only recently have the soft factors of IT project management started to gain ground. This observation is mirrored in analyses performed for International Journal of Project Management and Project Management Journal by Crawford, Pollack and England from 1994 to 2003 [Crawford, Pollack, England, 2006], and by Gemünden between 2000 and 2011 [Gemünden, 2014]. This shift towards the new research direction is convergent with the findings of reports on critical success factors of IT projects. Clients' expectations are enumerated among major risks of an IT project [Baccarini, Salm, Love, 2004; Ika, 2009], while managing them is considered its key success factor [Drake, Byrd, 2006]. Nevertheless, the practice of IT project management still excessively relies on the procedural and technical approach. As a result, most projects are burdened with an oversimplified attitude to the client[1] [Bredillet, Tywoniak, & Dwivedula, 2014]. Consequently, the IT project implementation methodology is selected mechanically and often fails to match the type of client. That is why it so important to undertake further research on this aspect of IT project management. Hence the identification of the type of client appears to be a crucial stage of the entire process; one cannot manage client relationships and expectations effectively without knowing which category the client represents. There is a gap in this respect both in the reference literature and business reality. Currently, the knowledge and mastery of soft skills on the part of any IT project manager are considered a prerequisite for a full success of an IT project implementation [Sukhoo, Barnard, Eloff, Van der Poll, Motah, 2005]. However, only few publications embrace these issues by offering schemes or models that would show their practical application during an IT project implementation, especially in terms of IT client relation management. For a few years now, the awareness of the client's role, or rather lack thereof, has been pointed out as number one among both critical success factors and failure causes in IT projects [The Standish Group, 2011; The Standish Group, 2014]. These indications proved significant enough for the author to explore the client factor and verify the client's role in such projects. Her studies led to developing an IT client maturity assessment model, which enables the selection of a methodology suited to the client type [Woźniak, 2013]. This model attempts to bridge the gap that was brought about by a rapid turn towards applying and perfecting IT project management methodologies. Most of the latter oftentimes led to defining the client role mechanically rather than raised awareness of what the role really involved. This trend was confirmed both by the IT project management reports analysed by the author and her own studies.

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[1] Throughout this paper, the client is to be understood as representing stakeholders who are the recipients of a given IT project. This group may comprise both project sponsors and direct users of the products of the project (e.g. IT systems).

The objective of the studies presented in this article is to verify the possibility to apply the author's IT client maturity assessment model to identify the type of client in a given project and to perform an empirical verification of the research scheme designed for studies within this realm of topics. The paper presents the first stage of research work on an effective client cooperation model for IT projects. The entire model is composed of three major modules:

I.    identfitying client maturity,
II.   selecting an IT project implementation methodology,
III.  matching IT with business.


**METHODOLOGY**

In order to attain the project objective thus defined, the author found it necessary to design qualitative studies [Glaser, Strauss, 1999]. The main reason for opting for the qualitative studies was a need to gather as much information as possible on the study subjects' perception of the subject area under study and their attitude towards it is, at the same time minimising the researcher's impact on their responses [Adamkiewicz-Drwiłło, 2008]. To ensure high quality of the results, triangulation was used with respect to the methods and sources of data [Denzin, 2006]. The methods used included an unstructured interview, questionnaire and project documentation study. All these solutions were adopted in an attempt to eliminate subjectivism, which is particularly important in qualitative studies [Eisenhardt, Graebner, 2007].

The subject of the study was a group of clients of an IT sector company, which provides IT products and services for SMSs. The study involved all the clients of the company in which, while the study was being carried out, the IT projects were at an advanced stage of delivery (over 50% of the schedule realised). This choice of respondents guaranteed the objectivity of the study – on the one hand, information was collected that was still fresh in the clients' minds, and on the other, the project-related activities were advanced enough not to cause a risk of changing the nature of the company-client interaction. A total of 15 clients participated in the study.

The last element of this stage of the research project in question is the IT client maturity matrix. It encompasses two categories – awareness and commitment. The data obtained in the course of the study, after they have been encoded and processed [Miles, Huberman, 1994], make it possible to calculate the necessary indices for these categories and map particular respondents onto the matrix. This is tantamount to identifying their type – as IT clients.

## CLIENT MATURITY ASSESSMENT MODEL

The client maturity assessment model in the form of matrix is a basis for the research project and, at the same time, a comparative study matrix. The model evolved as a result of the author's reserach works carried out in the period 2010-2013. It was published in 2013[2] together with an analysis of factors taken into account when an IT project management methodology is selected, and recognized by reviewers specialising in IT projects as a groundbreaking approach to the role and place of the client in IT projects.

Lack of accurate IT client diagnosis increases the risk of selecting an IT project management methodology that does not match the type of client. What follows is an ineffective cooperation with the client when specifying his IT requirements, and consequently, limited chances of completing the project as a fully successful one. Ultimately, the model should be used for classifying clients, prior to launching the project, in terms of their maturity within a given IT area, and for recommending a project management methodology on the basis of critical maturity aspects for particular methodologies.

The model is based on the combination of two aspects – awareness and commitment – in the context of an IT project. This combination makes it possible to define the IT client maturity.

Awareness is a mental activity, whose level can be marked on a continuum. One end of it stands for a complete awareness of a given domain, problem, project, process, etc., and the other – for a poor knowledge or lack of knowledge of a given domain [Werner, 2007]. Moreover, awareness is a process of a particular, individual dynamics. The dynamics and the way awareness develops will also depend on the other maturity component, i.e. commitment.

Commitment is more complex a notion. It is connected with employees' feelings as well as the organisation itself and the work performed. In their studies, professsors A. Saks, A. Bakker and W. Schaufeli from the University of Utrecht show that commitment should be defined and measured as a separate, relatively permanent state of an affective-cognitive nature. [Beck, Wilson, 2001]

These two categories combined into a matrix constitute a tool for client maturity assessement. A high level of client's awareness of the IT domain does not mean that the client

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[2] Woźniak M, Problematyka powodzenia przedsięwzięć IT w organizacjach – rola i miejsce klienta, Studia i Prace Kolegium Zarządzania i Finansów 125/2013, Szkoła Główna Handlowa w Warszawie, Warszawa, ISSN 1234-8872 (pp. 127-143).

is characterised by a high level of IT maturity. A high level of awareness does not imply an equally high level of commitment. The same holds true the other way round – a fact of client's high commitment level does not need to coincide with his awareness level. That is why it is only the combination of those two aspects within a matrix that makes it possible to assess the client's maturity (Fig. 1). [Woźniak, 2013]
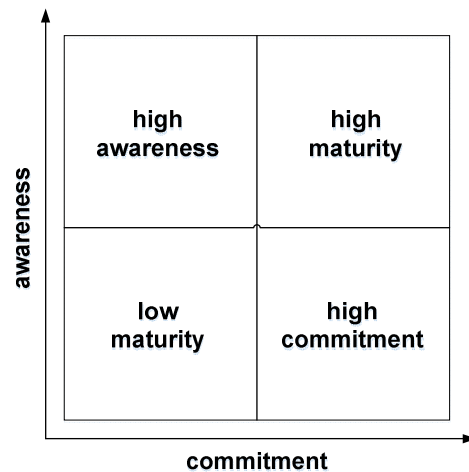
Fig. 1. The client maturity matrix

Source: own

Four variants were adopted for IT client maturity assessment:

– low maturity – client shows a trifling awareness of his IT-related needs and does not show commitment to the IT project implemented,

– high awareness – client is knowledgeable about IT to the extent sufficient for the implementation of a given IT project but sees no need to increase his involvement in the project,

– high commitment – client shows a trifling awareness of his IT-related needs but his commitment to the IT project implemented is significant,

– high maturity – client show a high degree of both awareness and commitment with respect to the IT project implemented.

A correct evaluation of the level of both categories will make it possible to identify the type of client. This assessement, when juxtaposed with the rules and requirements of IT project management methodologies, leads to certain recommendations pointing out the optimum IT project management methodology for a given client. Investigating these categories at the initial

stage of the project will enable an efficient cooperation with the client and increase the probablility of a successful completion of the project.


## RESEARCH SCHEME FOR IT CLIENT TYPE IDENTIFICATION

Many years of research work on IT project management resulted in the development of a scheme for IT client type identification with the use of the client maturity assessment model for IT projects (Fig. 2). The scheme is composed of the following stages:

– analysing IT projects implemented by the subject (order analysis, IT project documentation analysis, report study),

– creating a client base (preliminary information about clients and projects),

– development of a semi-structured interview and a client questionnaire for researching clients within IT projects implemented by the subject [Konecki, 2000],

– researching clients with the use of the tools thus prepared,

– encoding the results of the study [Strauss, Corbin, 1992] in accordance with the principles of the client maturity assessment model,

– identifying the client type based on the client maturity assessment model.

The analysis of IT projects implemented by the subject under study aimed at learning about the company's clients, the kind and status of orders for IT products or services, specificity of the implementation of particular IT projects and the state of their advancement. On the basis of the analysis clients were selected that met the criteria of the study, and a client base was created for the study planned. The knowledge of the client and the specificity of the IT project implemented provided a vital context for the client study and for the interpretation of the information gathered [Yin R.K. 2003].

It was of key importance for the study to design the interview and the questionnaire in such a way that both tools, complementing each other, would enable a thorough and precise analysis of the client in relation to the client maturity assessment model for IT projects.

The semi-structured interview was designed as a map of topics of importance for a deepened client analysis. To reduce the impact of suggestion, no typical question-and-multiple-answers survey was used. Certain topics enabled the interviewer to proceed with an extended discussion. The interview carried out in this manner fully reveals the level of the client's

awareness of a given thematic area and eliminates the threat of eliciting information that is more of a client's picture of himself than a reflection of the real situation. [Kostera, 2003]

The questionnaire, on the other hand, was designed in such a way that it included questions aiming to clarify the topics connected with the IT project under implementation that could potentially be more formalized [Konecki, 2000].

It this study, it is necessary to verify the accuracy of the clients' responses to some questions against the project documentation, and clarify any discrepancy in the course of the interview. It should be done especially with respect to issues that concern, for instance, the relevance of the specification of IT requirements generated by the client's company for the project purposes. This kind of triangulation of data sources and methods increases the objectivism of the results obtained, which substantially influences the accuracy of the client assessment.

Another important and rather sensitive part of the study was the necessity to evaluate the client's responses on the spot and direct further parts of the study accordingly. A semiotic analysis was used for this purpose. The clients' responses were analysed in terms of both content and expression, which enabled a proper encoding of the information elicited, i.e. ascribing a certain number of points to particular answers in two categories – awareness and commitment. Most questions were formulated in a way that enabled the assessment of both categories. Those that referred to only one of them were split.

The 0 to 10 scale was applied. A number of points allocated depended on a number of qualitative factors such as:

– the nature of the IT project under implementation,

– the degree of correspondence between answers and the preceding project documentation study,

– the way the respondent replied to a given thematic area and ease with which it was done,

– the range and quality of the vocabulary used,

– the degree to which a given thematic area was covered.

All the responses were analysed and encoded in relation to these factors. It means that the way in which the study was pursued required an individualised approach. Such is also the nature of today's IT projects.

The last component of the research scheme involves calculating the ultimate values of the awareness and commitment levels of particular respondents on the basis of the results obtained, and mapping them onto the client maturity matrix. This final step enables the identification of the IT client that the entity cooperates with.
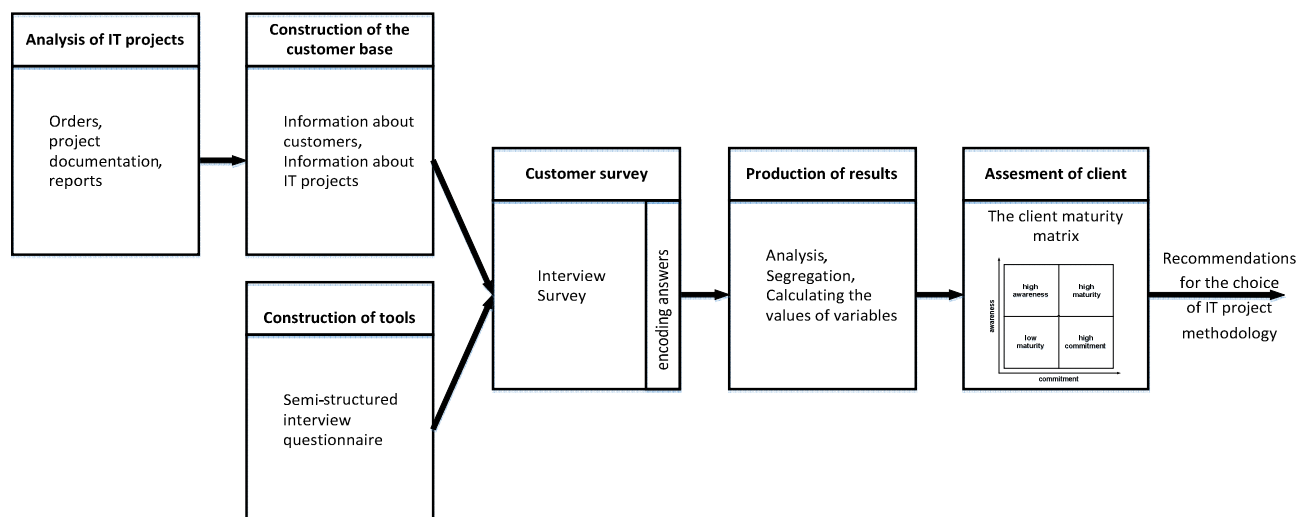


Fig. 2. Research scheme for IT client type
Source: own

## RESEARCH RESULTS

The article presents three consecutive stages of arriving at the final results on the basis of information elicited from the respondents – starting from a presentation of partial results following the encoding of the interview and questionnaire answers provided by the selected clients, through the calculation of indices of importance to the client maturity assessment model, ending with the final mapping of the indices onto the client maturity matrix.

A careful qualitative encoding of the clients' responses according to the scale adopted and the division into two categories of the IT client maturity assessment model made it possible to group the results of the study into two categories of qualities – awareness and commitment (see Tables 1-4).

Table 1. Results of the study of individual clients for the features of awareness resulting from the interview (in 0-10 points)

| The client | I1 | I2 | I3 | I4 | I5 | I6 | I7 | I8 |
|---|---|---|---|---|---|---|---|---|
| cl_1 | 2 | 1 | 3 | 2 | 3 | 4 | 4 | 5 |
| cl_2 | 1 | 2 | 2 | 2 | 1 | 4 | 4 | 4 |

| cl_3 | 2 | 2 | 2 | 3 | 2 | 5 | 5 | 6 |
|------|---|---|---|---|---|---|---|---|
| cl_4 | 3 | 2 | 3 | 3 | 3 | 4 | 5 | 6 |
| cl_5 | 2 | 3 | 3 | 3 | 3 | 4 | 4 | 5 |
| cl_6 | 2 | 3 | 2 | 2 | 2 | 3 | 4 | 4 |
| cl_7 | 3 | 2 | 3 | 3 | 3 | 4 | 4 | 4 |
| cl_8 | 4 | 3 | 4 | 4 | 3 | 5 | 5 | 4 |
| cl_9 | 3 | 3 | 2 | 3 | 3 | 3 | 3 | 3 |
| cl_10 | 4 | 3 | 2 | 3 | 3 | 4 | 4 | 3 |
| cl_11 | 2 | 3 | 3 | 4 | 3 | 3 | 4 | 3 |
| cl_12 | 5 | 5 | 6 | 5 | 5 | 6 | 5 | 6 |
| cl_13 | 2 | 1 | 2 | 3 | 2 | 3 | 3 | 3 |
| cl_14 | 3 | 2 | 3 | 3 | 2 | 3 | 2 | 3 |
| cl_15 | 2 | 2 | 3 | 3 | 1 | 2 | 3 | 3 |

Source: own

Table 2. Results of the study of individual clients for the features of awareness resulting from the questionnaire (in 0-10 points)

| The client | Q1 | Q2 | Q3 | Q4 | Q5a | Q6 | Q7 | Q8 | Q9a | Q10 | Q11 | Q12 | Q14 | Q15 | Q16 |
|------------|----|----|----|----|-----|----|----|----|-----|-----|-----|-----|-----|-----|-----|
| cl_1 | 3 | 3 | 1 | 2 | 3 | 3 | 3 | 2 | 3 | 2 | 3 | 3 | 4 | 4 | 4 |
| cl_2 | 3 | 2 | 0 | 1 | 2 | 3 | 3 | 1 | 4 | 2 | 3 | 2 | 4 | 3 | 3 |
| cl_3 | 3 | 4 | 0 | 2 | 3 | 4 | 2 | 3 | 4 | 2 | 2 | 2 | 4 | 4 | 4 |
| cl_4 | 4 | 5 | 2 | 3 | 3 | 2 | 2 | 3 | 3 | 3 | 2 | 2 | 5 | 4 | 4 |
| cl_5 | 3 | 4 | 0 | 2 | 3 | 4 | 3 | 3 | 4 | 2 | 3 | 3 | 4 | 4 | 4 |
| cl_6 | 3 | 4 | 1 | 2 | 3 | 3 | 2 | 2 | 3 | 2 | 2 | 2 | 3 | 3 | 3 |
| cl_7 | 3 | 3 | 2 | 3 | 4 | 3 | 3 | 2 | 3 | 3 | 3 | 3 | 4 | 4 | 4 |
| cl_8 | 4 | 4 | 4 | 3 | 4 | 5 | 5 | 4 | 4 | 3 | 3 | 3 | 3 | 5 | 5 |
| cl_9 | 3 | 3 | 2 | 2 | 3 | 2 | 2 | 3 | 3 | 2 | 2 | 4 | 4 | 3 | 3 |
| cl_10 | 3 | 4 | 3 | 3 | 4 | 4 | 3 | 3 | 3 | 2 | 3 | 4 | 3 | 4 | 4 |
| cl_11 | 4 | 3 | 1 | 3 | 4 | 3 | 3 | 3 | 4 | 3 | 3 | 3 | 4 | 3 | 3 |
| cl_12 | 5 | 5 | 4 | 4 | 5 | 5 | 4 | 4 | 4 | 4 | 4 | 5 | 5 | 5 | 5 |
| cl_13 | 2 | 2 | 0 | 2 | 1 | 3 | 3 | 3 | 2 | 2 | 2 | 2 | 2 | 2 | 2 |
| cl_14 | 3 | 3 | 1 | 3 | 2 | 3 | 3 | 3 | 2 | 3 | 3 | 3 | 2 | 3 | 2 |
| cl_15 | 2 | 3 | 0 | 2 | 2 | 2 | 3 | 1 | 3 | 2 | 2 | 2 | 3 | 2 | 2 |

Source: own

Table 3. Results of the study of individual clients for features of commitment resulting from the interview (in 0-10 points)

| The client | I1 | I2 | I3 | I4 | I5 | I6 | I7 | I8 |
|---|---|---|---|---|---|---|---|---|
| cl_1 | 6 | 3 | 5 | 4 | 6 | 7 | 6 | 6 |
| cl_2 | 7 | 3 | 5 | 5 | 7 | 7 | 6 | 7 |
| cl_3 | 6 | 4 | 6 | 5 | 6 | 6 | 6 | 6 |
| cl_4 | 6 | 4 | 5 | 7 | 5 | 6 | 5 | 6 |
| cl_5 | 7 | 4 | 6 | 6 | 7 | 7 | 6 | 7 |
| cl_6 | 5 | 3 | 7 | 7 | 5 | 7 | 7 | 6 |
| cl_7 | 6 | 3 | 6 | 6 | 5 | 5 | 5 | 6 |
| cl_8 | 6 | 6 | 5 | 6 | 6 | 6 | 6 | 5 |
| cl_9 | 7 | 3 | 6 | 7 | 5 | 6 | 7 | 6 |
| cl_10 | 7 | 4 | 5 | 5 | 7 | 7 | 8 | 7 |
| cl_11 | 5 | 3 | 5 | 6 | 5 | 6 | 6 | 6 |
| cl_12 | 6 | 5 | 5 | 6 | 6 | 6 | 7 | 6 |
| cl_13 | 4 | 2 | 6 | 5 | 4 | 5 | 5 | 5 |
| cl_14 | 5 | 4 | 7 | 6 | 6 | 7 | 6 | 7 |
| cl_15 | 5 | 3 | 6 | 5 | 5 | 6 | 6 | 6 |

Source: own

Table 4. Results of the study of individual clients for features of commitment resulting from the questionnaire (in 0-10 points)

| The client | Q1 | Q5b | Q6 | Q7 | Q8 | Q9b | Q13 |
|---|---|---|---|---|---|---|---|
| cl_1 | 6 | 5 | 6 | 6 | 6 | 6 | 6 |
| cl_2 | 6 | 6 | 7 | 7 | 6 | 7 | 7 |
| cl_3 | 5 | 6 | 5 | 5 | 5 | 5 | 6 |
| cl_4 | 5 | 5 | 5 | 5 | 7 | 5 | 5 |
| cl_5 | 6 | 6 | 6 | 5 | 6 | 6 | 6 |
| cl_6 | 6 | 6 | 7 | 7 | 6 | 6 | 7 |
| cl_7 | 5 | 5 | 6 | 6 | 5 | 6 | 6 |
| cl_8 | 7 | 7 | 6 | 6 | 6 | 7 | 6 |
| cl_9 | 6 | 6 | 7 | 7 | 7 | 7 | 6 |
| cl_10 | 6 | 6 | 7 | 6 | 6 | 6 | 7 |
| cl_11 | 6 | 6 | 6 | 7 | 6 | 7 | 6 |
| cl_12 | 7 | 6 | 6 | 7 | 6 | 7 | 7 |
| cl_13 | 4 | 5 | 5 | 4 | 5 | 5 | 5 |
| cl_14 | 6 | 5 | 7 | 6 | 6 | 6 | 7 |
| cl_15 | 4 | 5 | 5 | 5 | 6 | 5 | 5 |

Source: own

In order to refer the results thus obtained to the client maturity matrix, mean averages were calculated for particular clients in the categories applied for IT client maturity assessment (see Tables 5 and 6). Particular averages stand for: AI – average of the points scored for the

interview, AQ – average of the points for the questionnaire. They were calculated separately for the category of awareness and that of commitment. Out of particular avarages the indices were obtained of the awareness level (A) and commitment level (C) for particular clients within the IT projects implemented.

Table 5. The level of client's awareness (in 0-10 points)

| Klient | IA | QA | A |
|--------|-----|-----|-----|
| kl_1 | 3,0 | 2,9 | 2,9 |
| kl_2 | 2,5 | 2,4 | 2,5 |
| kl_3 | 3,4 | 2,9 | 3,1 |
| kl_4 | 3,6 | 3,1 | 3,4 |
| kl_5 | 3,4 | 3,1 | 3,2 |
| kl_6 | 2,8 | 2,5 | 2,6 |
| kl_7 | 3,3 | 3,1 | 3,2 |
| kl_8 | 4,0 | 3,9 | 4,0 |
| kl_9 | 2,9 | 2,7 | 2,8 |
| kl_10 | 3,3 | 3,3 | 3,3 |
| kl_11 | 3,1 | 3,1 | 3,1 |
| kl_12 | 5,4 | 4,5 | 5,0 |
| kl_13 | 2,4 | 2,0 | 2,2 |
| kl_14 | 2,6 | 2,6 | 2,6 |
| kl_15 | 2,4 | 2,1 | 2,2 |

Source: own

Table 6. The level of client's commitment (in 0-10 points)

| Klient | IC | QC | C |
|--------|-----|-----|-----|
| kl_1 | 5,4 | 5,9 | 5,6 |
| kl_2 | 5,9 | 6,6 | 6,2 |
| kl_3 | 5,6 | 5,3 | 5,5 |
| kl_4 | 5,5 | 5,3 | 5,4 |
| kl_5 | 6,3 | 5,9 | 6,1 |
| kl_6 | 5,9 | 6,4 | 6,2 |
| kl_7 | 5,3 | 5,6 | 5,4 |
| kl_8 | 5,8 | 6,4 | 6,1 |
| kl_9 | 5,9 | 6,6 | 6,2 |
| kl_10 | 6,3 | 6,3 | 6,3 |
| kl_11 | 5,3 | 6,3 | 5,8 |
| kl_12 | 5,9 | 6,6 | 6,2 |
| kl_13 | 4,5 | 4,7 | 4,6 |
| kl_14 | 6,0 | 6,1 | 6,1 |
| kl_15 | 5,3 | 5,0 | 5,1 |

Source: own

The indices of awareness and commitment thus obtained were then mapped onto the client maturity assessment matrix, which enables the identification of the type of IT client (see Fig. 3).
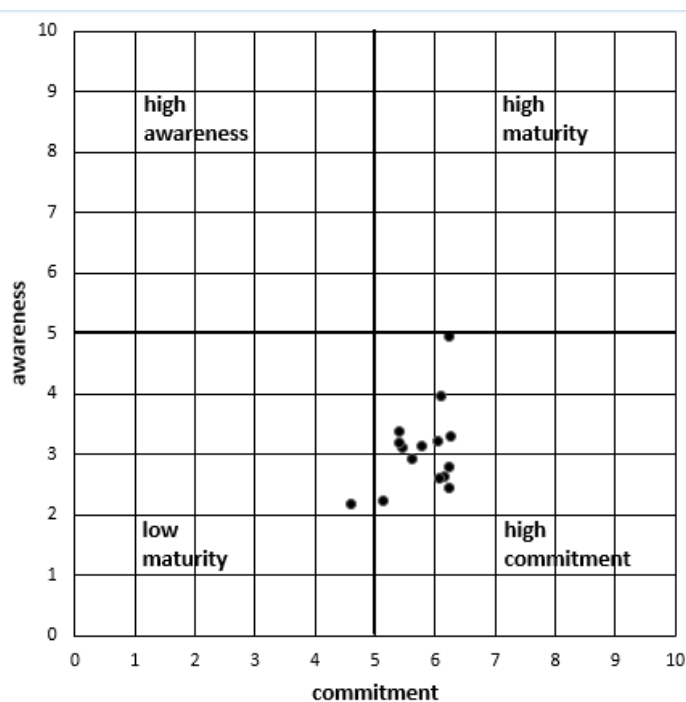
Fig. 3. The client maturity matrix - survey results
Source: own

The structure of research tools proposed (interview, questionnaire) and the adopted assumptions concerning the factors to study – IT-related awareness and commitment – made it possible to order, analyse and encode the responses carefully. The processing of the data in the contex of the assumptions of the client maturity assessment model led to obtaining concise indices, which, when mapped onto the maturity matrix, enable the identification of an IT client type. Therefore, the results of the study confirmed the applicability of the research scheme presented. This fact is of considerable importance to IT project management since, due to the positive verification of the IT client identification methods and tools proposed, it is now possible to select the most effective methodology for the implementation of a given IT project. A proper match of the client type and the methodology choice is one of the critical success factors of any IT project. The IT client maturity model presented here that leads to the identification of the client type is, therefore, a starting point for implementing a crucial, even if often neglected, stage of IT projects – recommendation of a selection of an IT project realisation methodology suitable to the client type.

**CONCLUSION**

This paper fits in the necessity of developing the line of research focused on raising the awareness of the role and needs of the client in the IT sector. The creation of the client type

research scheme for an IT project both constitutes a contribution to the domain of IT project management and provides an important tool for practicioners within it. Based on the client maturity assessment model developed by the author, the scheme also results from further studies around the same topic, at the same time being another step forward on the research path focusing on an effective client cooperation model in IT projects, with a special emphasis put on defining the client's needs as a recipient or user of IT products or services created.

There is a certain contraint to the research work described here – data collected in the course of the study came form clients of a single organisation. It may raise doubts whether its results, limited to this organisation, could apply to other entities implementing IT projects. However, despite the fact that clients of a single entity were involved, the selection of research questions is well grounded in the findings based on reference literature and IT project reports. The client research path presented can be referred to all IT project-related entities, as for a majority of them the clients are the critical component of an IT project. [Mason, 2002] However, application of the path will require a change of the organisational culture and mentality within companies and IT teams [Cameron, Quinn, 2003; Czarkowska, 2006]. The more so that the issue of IT client type has not been covered in reference literature and that the topic of matching an IT project realisation methodology with the client type has been neglected by IT project management standards. Further studies would therefore be helpful alongside promoting the new approach to IT project client in publications.

Another line of research of potential importance to the topics covered in this article is that concerning the perspective of the IT team and the IT project manager on the necessary conditions and motivation behind a selection of an IT project implementation methodology as well as their attitude to the change regarding matching the methodology selection with the client type analysis.

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# Application of modified S-curve in forecasting of growth in economy

by

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**ABSTRACT**

In theory of economy there is a view that each manufacturing activity is subjected to the logistic growth law, its forms are e.g. the law of decreasing income from farming or the law of relatively decreasing efficiency of expenditure. The above mentioned laws are based on experience and empirical research and lead to the conclusion that each manufacturing activity depends on the quantity of expenditures and the technological process used. You can say that in a given technological process after the beginning, which is characterized by a slow growth, the increase of expenditures causes the dynamic growth of effects to the maximum. From that moment on the growth of effects is smaller and smaller until it completely disappears. After that period, in some cases, a rapid decrease can happen. Similar relations can be found in another branches of science, for example concerning enterprises, where we talk about a limited growth of interest and the sale of a given product (product life cycle), or a limited growth of a market share. In each case we deal with the phases of growth that can be identified (Kuznets 1971, Metcalfe 2001, Mar-Molinero 1980).

Logistic function is most frequently used to describe economic or natural phenomena which obey the logistic growth law. But in many economic and financial cases it turns out that the logistic function doesn't work, main reason is "unlimited growth" phenomenon. As we know, quantities such as economic and financial data, cannot be limited. If their value does not decrease rapidly after the intensive growth phase, then it is followed by a slow increase.

In our article is shown that no matter how good is economy situation, sooner or later some difficulties will appear. Hence, the idea of assigning the analytical form of the logistic law based on selected financial data. The presented proposal of analysis of the logistic law in finance and economic and the model of forecasting using the modified S-curve (loglogistic function). In

article we proposed own estimation iterative method which can be used to estimate all functions, especially those, which cannot be converted to linear form.

**Key words**: law of growth, forecasting, business cycle, time series analysis, warning signals, JEL: C130, C220, C530, E320

## 1. INTRODUCTION

In our article is shown proposition of determining the business cycle and the model of forecasting using the modified logistic function (loglogistic function) and its estimation method (based on logistic law (Kuznets 1971)) which has been tested on GDP of Greece as an example of troubled economy and Germany as an example of strong economy.

In theory of economy there is a view that each manufacturing activity is subjected to the logistic growth law, its forms are e.g. the law of decreasing income from farming or the law of relatively decreasing efficiency of expenditure. The above mentioned laws are based on experience and empirical research and lead to the conclusion that each manufacturing activity depends on the quantity of expenditures and the technological process used. You can say that in a given technological process after the beginning, which is characterized by a slow growth, the increase of expenditures causes the dynamic growth of effects to the maximum. From that moment on the growth of effects is smaller and smaller until its total disappearance. After that period, a rapid decrease can happen in some cases. Similar relations can be found in sciences concerning enterprises, where we talk about a limited growth of interest and the sale of a given product (product life cycle), or a limited growth of a market share. In each case we deal with the phases of growth that can be identified (Kuznets 1971, Metcalfe 2001, Mar-Molinero 1980, Siedlecki, Papla 2013).

Financial crises are an important phenomenon for the economy because in time of the crisis the cost of intermediation and the cost of credit increases, access to credit is also more difficult (Kurach, Papla 2016). This results in a reduction in activity of the real sector which may lead to the crisis in this sector.

The quite high incidence of economic and financial crises may lead to the conclusion that the global economy is particularly sensitive to various types of disturbances. In particular, the crisis of recent years has shown how the global economy is sensitive to disturbances in the era of globalization (Siedlecki, Papla 2013; Brunnermeier 2009; Coffee 2009; Guillen 2009; Kolb 2010; Shiller 2008).

In case of the economy, we can say that their development is identified with the GDP intensification (Modis 2013, Kwaśnicki 2013, Boretos 2009). The cycles phases are also visible (noticeable) in GDP. According to e.g. J. Grodinsky (Grodinsky 1953), when a new business appears on the market, many enterprises try to enter it in its early and quick stage of development. Next stage is the time of domination of the strongest country economies and elimination of the weakest ones. Strong (rapid) increase is characteristic of that stage, though it's slower than in its early stage. According to Grodinsky's proposal first stage is a pioneering stage (i.e. after political transformation like in post-communist countries) and the second is an expansion stage. In the final stage the economy is expected to stop growing and remain stable for some time.
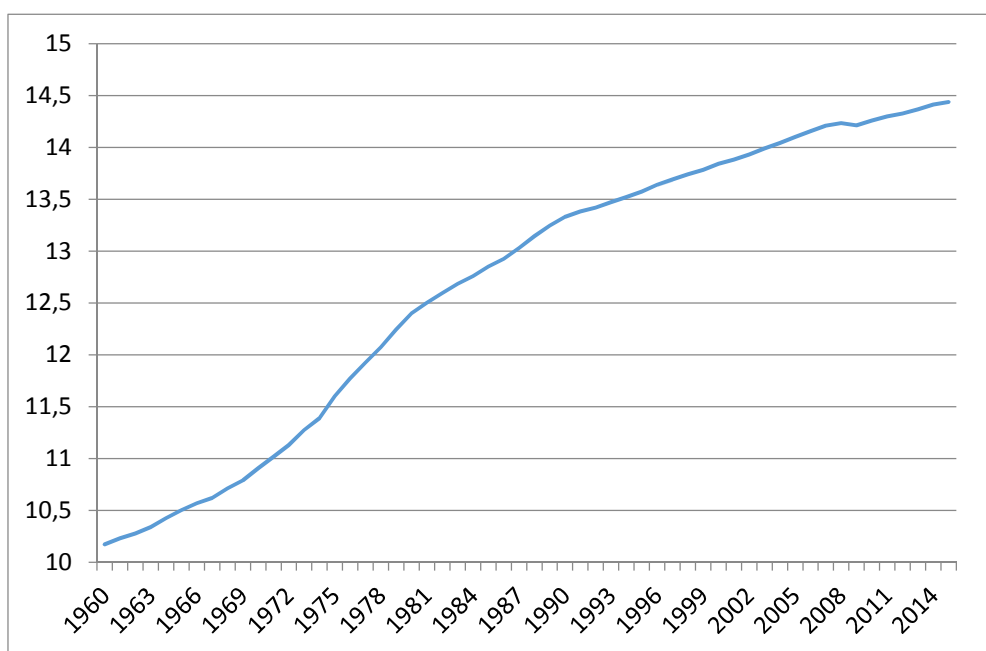


Figure 1. UK GPD 1960-2015

Source: Own study

To identify the stages of market and economy development we need for example economic indicators like GDP or stock market indexes of prices.

We can say that the values of the above mentioned financial parameters are linked with markets. Depending on the cycle phase, the growth of those data is different. In the early stage the value of the above mentioned data is not big and their growth rate is little. After some time the markets or economy enters the phase of crisis or enters the phase of intensive growth. At this stage exponential data growth such as GDP or indexes appears. The growth in time is smaller and smaller and the market enters the stability stage. We can notice that if the market is stable the shape of the index takes usually the form of logistic

curve. On Fig. 1 example of GDP is shown. All data used in this paper were changed to log values.

Phases of market and economy cycle can be isolated in all those examples. All of them have undergone the early and intensive growth stage. All of them have also undergone slight growth retardation.

## 2. S-CURVE AND MODIFIED S-CURVE

Logistic function is mathematic expression of logistic growth law. It has for the first time been put forward by P.F. Verhulst (Verhulst 1838). This function is most frequently used to describe economic or natural phenomena. It's the only solution of a differential equation called, in economy, the Robertson's, Prescott's, Kuznets' (Robertson 1923, Prescott 1922, Kuznets 1971) law:

$$\frac{dy}{dt} = \frac{c}{a} y(a - y),$$

on initial condition:

$$y(0) = \frac{a}{1 + e^b}.$$

And is expressed by following formula:

$$f(t) = \frac{a}{1 + e^{b-ct}}.$$

Where: $a > 0$, $b > 0$, $c > 0$

Development of financial and economic ratio and growth rates are shown in Figure 2.

Analyzing the differential equation shows that the rate of change of cash flows is directly proportional to the product of $y$ $(a - y)$ for which $y$ is the momentum factor and $(a - y)$ is an inhibiting factor (Stanisz, 1986; Siedlecki, 2014). When $t$ tends to infinity the function tends to a maximum value of ratio (saturation level). Logistic function allows extrapolation of long time series. This is important in determining phases of company development and growth forecasting cash flows, as in the determination of cash flows should be taken into account transition time from one phase of development to another, and the saturation level. Establishing moments of change cycle phases can be done using analytical methods and expertise, (which determines the point of transition to a phase of intensive growth). This moment is important, because wrong

assessment of the situation will result in large errors. To determine this point, the use of historical data, analysis of the sector and macroeconomic similar companies are very useful, as it turns out in many cases. Moments of transition of the company in the of phase of intensive growth or in stagnation period is determined on the basis of the analysis of I and II derivatives (Siedlecki and Papla, 2013). Determining the moment of transition in the phase of intensive growth automatically determines the moment of transition in the phase of stagnation, because the first derivatives at these points are identical. The second derivative of this function can determine the change bulge function is as follows. After solving the equation of II derivative we get the following features: the function is convex for $0 \leq t < \frac{b}{c}$ and concave for t> $\frac{b}{c}$.



Figure 2. Phases of growth based on the logistic function
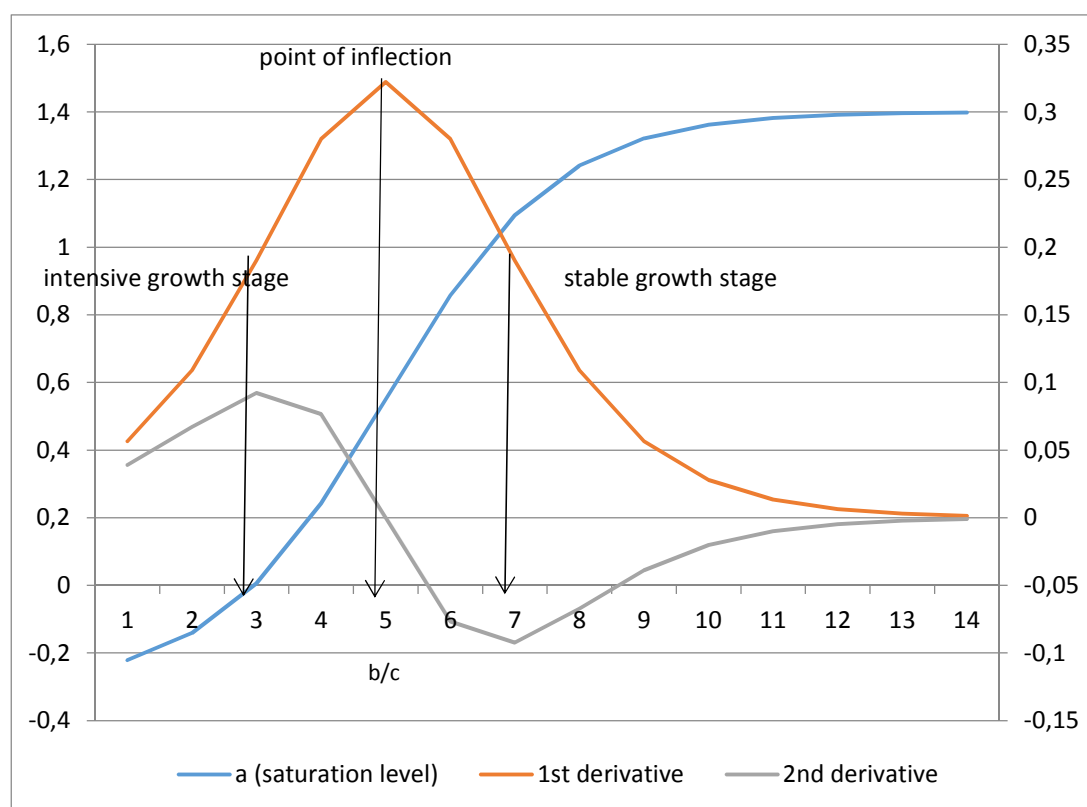
Source: (Siedlecki, Papla, Kwiedorowicz 2015)

Logistic curve is a simple and universal, universally used and tolerably reliable tool of constructing the distant economic forecasts (Davis 1941). At the same time it is also the way of measuring, observing and analysing the efficiency and great complexity technical devices effectiveness or large scale economic systems.

This function has two asymptotes $y = 0$ and $y = a$, assigning the interval of variability of a given process. The upper determines the saturation level. The function has one inflexion point separating the phase of accelerated growth form the phase of decreasing growth rate. Another important characteristic of logistic function is its great flexibility, which allows for very good approximation of the empirical data. The function is perfect for identifying the early stages of company development, i.e. from the origin phase through the intensive growth phase to the stagnation phase. However it has one serious defect, which is the horizontal asymptote limiting the growth.

It is a well-known fact that after the intensive growth of the values of financial data mentioned above we have either collapse or slow increase.

In many economic and financial cases it turns out that the logistic function doesn't work, it concerns mainly "unlimited growth" phenomenon. As we know, quantities such as GDP, stock market indexes, salaries in enterprises, sales or company value (it is well known that the aim of a company is to maximize its value in a long term) cannot be limited. If their value does not decrease rapidly after the intensive growth phase, then it is followed by a slow increase (its rate should fall to zero).

Modification of the logistic function by introducing it as a factor in the function that is growing indefinitely with decreasing derivative:

$$f(t) = \frac{a}{1 + e^{b-ct}} \varphi(t)$$

The best function should have first derivative the following form:

$$\varphi'(t) = \alpha t^p, \text{ for-}1 \leq p < 0$$

Assuming p = -1 omitting α we get

$$\varphi(t) = \ln(t).$$

We can see that the way to eliminate the logistic function limited growth defect is to modify the function by introducing the $\ln(t)$ factor. The modified function is called log-logistic function (logarithmic-logistic). The function is expressed by the following formula (Hellwig, Siedlecki 1989):

$$f(t) = \frac{a \ln t}{1 + e^{b-ct}},$$

where $a > 0$, $b > 0$, $c > 0$.

When examining the function variability graph, we can show its basic properties

$$\lim_{t \to \infty} \frac{a \ln t}{1 + e^{b-ct}} = \infty,$$

$$\lim_{t \to 0} \frac{a \ln t}{1 + e^{b-ct}} = -\infty$$

and for $t_1 < t_2$

$$\frac{a \ln t_2}{1 + e^{b-ct_2}} > \frac{a \ln t_1}{1 + e^{b-ct_1}}$$

$$\frac{dy}{dt} > 0, \text{ for } t \geq 1$$

As we can see log-logistic function is the function growing constantly. It doesn't have extreme points and is always negative.

$$\frac{dy}{dt} > 0, \text{ for } t \geq 1. \tag{14}$$

Log-logistic and logistic functions allow for far extrapolation of time series. It has significant meaning in forecasting of market phases of development using the logistic growth law e.g. value of index or turnover.
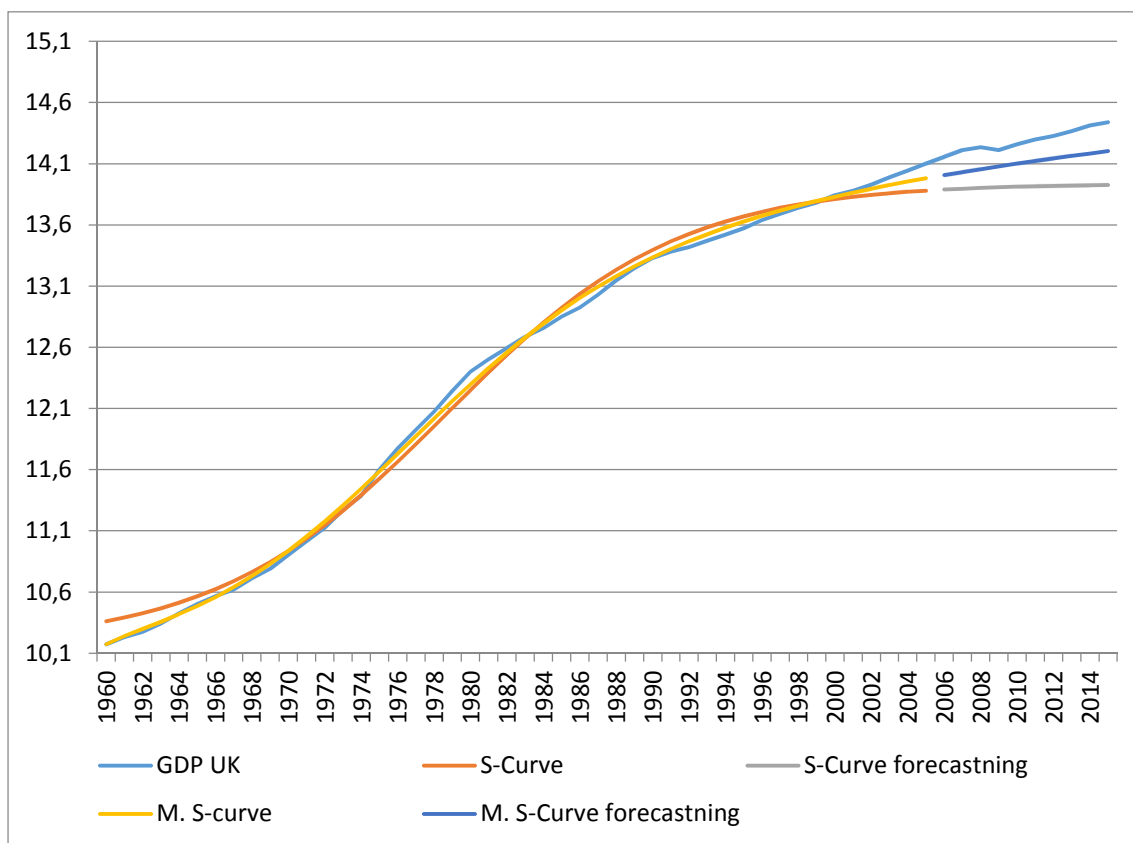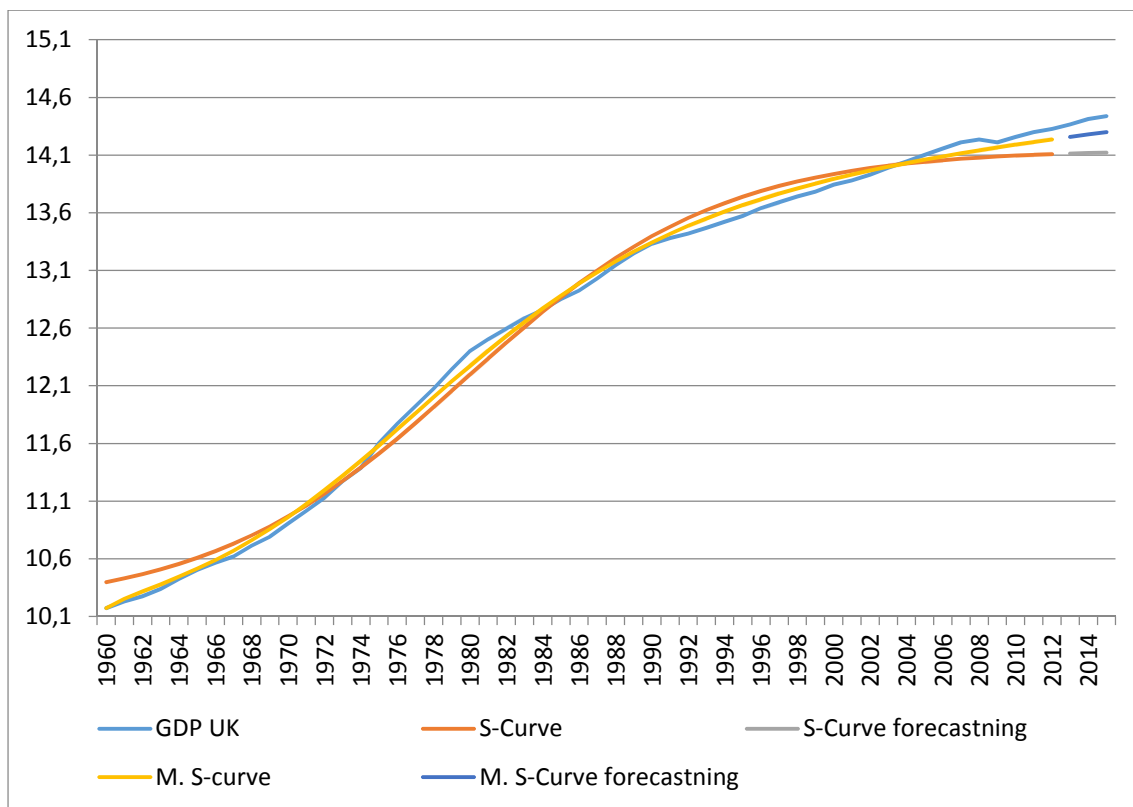
Figure 3. GDP UK 1960-2015 estimation and forecast for 3 and 10 years using logistic and loglogistic functions
Source: Own study

On fig. 3 we can see a comparison between logistic and loglogistic functions. Because logistic function has a horizontal asymptote values of GDP forecast are underestimated.

The logistic function has one point of inflection which is often close to the middle of intensive growth phase. The log-logistic phase has usually two points of inflection, where first point is of a less importance in shaping the growth cycle, and the second point, just like in logistic phase, usually indicates the middle of the intensive growth phase. Points of inflection in both functions indicate the change of function convexity (from convex into concave) which is the change of growth rate. To determine the points of inflection we should determine zero points in the second derivative by solving the following equation:

- For logistic function

$$\frac{3ac^2 e^{2b}}{\left(e^{ct}+e^b\right)^2} - \frac{2ac^2 e^{3b}}{\left(e^{ct}+e^b\right)^3} - \frac{ac^2 e^b}{\left(e^{ct}+e^b\right)} = 0 ,$$

- For log-logistic function

$$a\frac{c^2 t^2 e^{b-ct}\left(e^{b-ct}-1\right)\ln t - 2cte^{b-ct}\left(1+e^{b-ct}\right)-\left(1+e^{b-ct}\right)^2}{t^2\left(1+e^{b-ct}\right)^3} = 0 .$$

As we can see, the forms of these derivatives do not allow for easy determination of zero points depending on $b$ and $c$ parameters. $a$ parameter does not have influence on zero point.

When the economists determine the moment of transition to the intensive growth phase, they can try to match the logistic or log-logistic functions to the data they have. The moment is significant because misjudgement of the situation can cause a lot of errors. Matching the function is extremely difficult, we do not know how a market will behave in the future. Some historical data can be helpful and useful in many cases. Knowing the analytical form of one of some functions (screenplay method), and (using the expert method) the market moment of transition into the intensive growth phase, we can also determine the moment of transition into the stagnation stage.

First derivatives of logistic and log-logistic functions are as follows:

- logistic function:

$$\frac{d}{dt} = \frac{ace^{b+ct}}{\left(e^b+e^{ct}\right)^2} ,$$

- log-logistic function:

$$\frac{d}{dt} = a \frac{1 + e^{b-ct} + cte^{b-ct}\ln t}{t(1 + e^{b-ct})^2}.$$

As we can see that the first and second derivative of loglogistic function is very complex and it seems that it is impossible to estimate parameters with analitical methods. It is very difficult to convert this function to linear form.

## 3. NUMERICAL ESTIMATION OF LOG-LOGISTIC FUNCTION

Parameters of the logistic function can be found by analytical methods (see for example Kuznets (1971) and Davids (1941)), but parameters of log-logistic function cannot be estimated by this method, because the forms of the first and second derivatives are too complicated. In this paper is shown estimation of log-logistic function by iterative method.

Initial values of the parameters:

$$a = (\max(x_t) + \min(x_t))/2 \text{ or } 1,$$

$$b = 1,$$

$$c = 0,1.$$

In each iteration values of the parameters are like this:

$$ai = a + \alpha *(2 * Rnd - 1),$$

$$bi = b + \beta * (2 * Rnd - 1),$$

$$ci = c + \eta * (2 * Rnd - 1).$$

Where $\alpha > \beta > \eta$ and Rnd is random number. In each iteration we check estimation with $Z = \left[\sum_{j=1}^{k}(x_t - f(t))^2\right].$

**Table 1.** Estimation for UK GDP 1964-2011

| iteration | 10 | 50 | 100 | 1000 | 10000 | 100000 | 1000000 | 10000000 |
|---|---|---|---|---|---|---|---|---|
| a | 0.8657 | 0.9876 | 1.0500 | 1.0067 | 0.9822 | 0.9683 | 0.9680 | 0.9671 |
| b | 0.9355 | 1.0139 | 0.8559 | 1.1813 | 1.6858 | 2.0133 | 1.9922 | 2.0003 |
| c | 0.1297 | 0.0907 | 0.0746 | 0.1059 | 0.1333 | 0.1558 | 0.1554 | 0.1562 |
| Z | 3.9836 | 1.6178 | 1.7360 | 0.8316 | 0.3399 | 0.2662 | 0.2650 | 0.2649 |
| RMSE | 0.2880 | 0.1835 | 0.1901 | 0.1316 | 0.0841 | 0.0744 | 0.0743 | 0.0742 |

*Source:* own study.
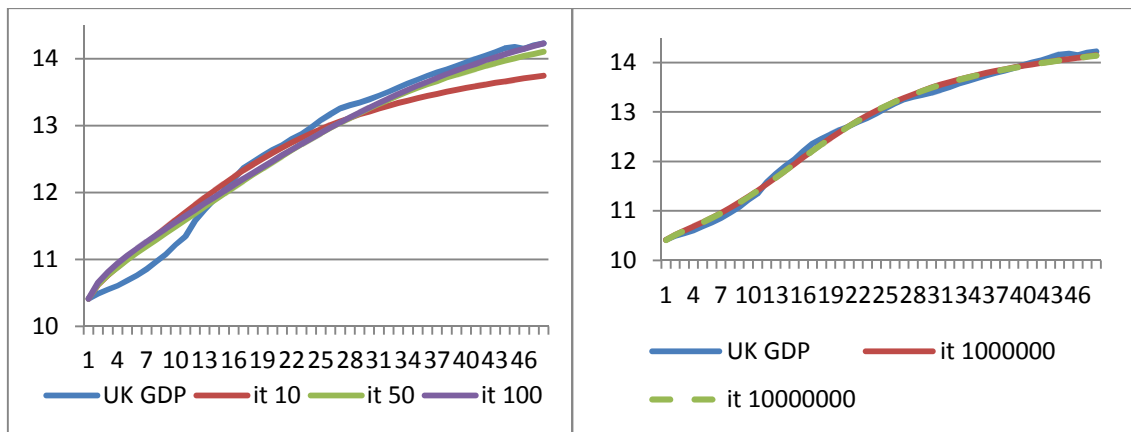
Figure 4. Example of estimation of loglogistic function
Source: own study.

On figure 4 and table 1 are shown estimations of loglogistic function for GDP of United Kingdom for increasing number of iterations. As we can see, that after one million iterations fit of the function is very high.
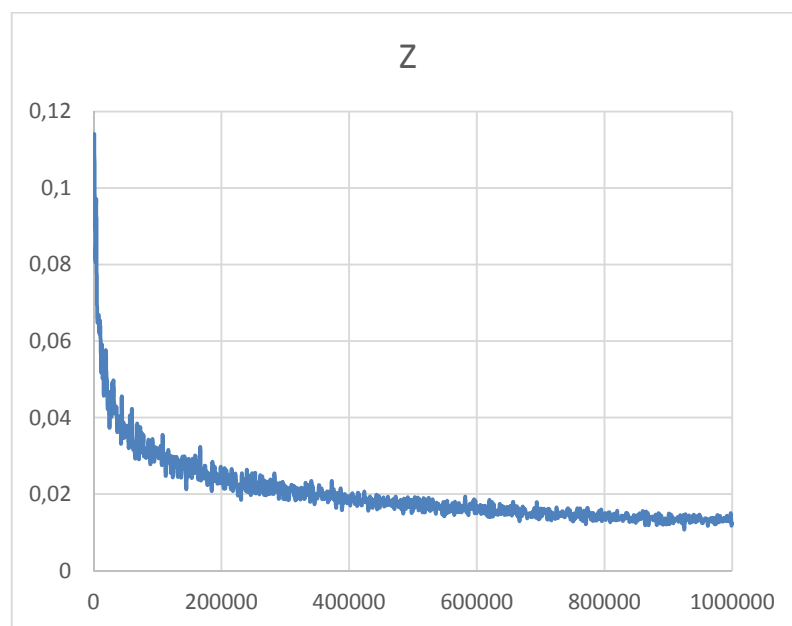


Figure 5. Z as a function of number of iterations
Source: own study.

As we can see the error of estimation Z is a decreasing function of iteration number. As number of iteration approaches 1 000 000, value of Z is almost constant, which means that we probably achieved optimal results, optimal fit.

## 4. CONCLUSION

In our short version of the paper (extended abstract) we successfully show how to use the modified S-curve (loglogistic function) and its estimation method (based on logistic law (Kuznets 1971)) to determine the business cycle. We also have presented new method of estimation of S-curve and modified S-curve. This estimation method can be successfully used not only for modified S-curve but also for other functions that cannot be presented in simpler, linear form. Our algorithm is simple, efficient and reliable and can implemented in many econometrical software tools, like Excel, Matlab, gretl, etc.

From presented examples we can derive some concluding remarks:

- log-logistic function is very good tool to smoothing time series because is monotonic and flexible,

- log-logistic function allows for far extrapolation of economic and finance time series,

- it is important in forecasting of economy and phases of financial development when using the logistic growth law.

In extended version of this paper and presentation will be shown application for countries with transition economics like Poland, Czech, Slovakia, Slovenia, Hungary. GDP per capita will be also used to rank and estimation phase of growth in global economy.

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# Session:

# ICT Impact on Culture, Education and Communication

Session Co-Chairs:

**Magdalena Kapała**, University of Wrocław, Poland

**Ewa Soja**, Cracow University of Economics, Poland

# The planet's communication

by

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## 1. ABSTRACT

Before the second World War only few people In the World have got communication to each other. apart from natural language, of course. But now, the whole situation has change radically Till now, almost each man keeps so; called the multiplay communication. It is goes not only of quantity aspects, but also culture, civilization, and mentality one. The mass communication changes our daily life.

It happens often that someone during the day talks longer by telephone, than direct speech. Our civization became a new size (dmension). Our daily habitual also change.

Kevy Mc Falland from Arizone University has said; "that some people more times spend on communication than for eating". Mass communication is not very popular, but also, introduces our life for quite new ways and civilization habituel. More and more people, children, old people and youth participate in modern communication. We can say, that the whole today's World is in mass-communication. It is a new civilization age in planet's World communication. All those things will be subject of our paper.

More details will be presents further in our paper. But now, we present more generaly remarks in introduce of our article.

## 2. KEY WORDS

Mass and planet's connection for World, culture, direct talk, indirect talk, culture, civilization, connect

## 3. METHODS

Description, comapare, analysis.

**4. GOALS**

Show the profits and negatives of today's communication, and its civilization World for future.

**5. LIMITS**

Only for communication World.

**6. SUMMARY**

The authors oft that paper write, that communication today, is not only usually connection, but also a specifically modern culture. Today, young generation, youth, adult, old people, each of us uses any kind of connection, like: sms, notetables,, computer, e-mails and other traditional telephones for communication.

For this reason we can called our civilization, as a „connecting" one. No, wonder that almost all people used today such eqipment. In the future we can see faces our speaker, by telephone not only hear their sound.

**7. WHY COMMUNICATION IS SPREAD?**

In the past when there were few poeple, they could connect to each other directly, apart from speech.

But today, when there are over seven milions people, the directly connection between theem wll be impossible. Thanks the discoveres people like; Faraday, Maxwell, Herz, we have used today the electronic equipments and can connet all over the World.

If we have not got such apparatus the actually civilization dieds, or stop. for ever.

Of course we can not demonize such kind of civilization, because it has profits and also negatgives factors. Now, we can mentioned some oft hem.

Profits:
- fast contact
- universal contact, anywhere
- at any time
- no, distance,

- for the whole World

Negatives:

- often breakdown

- sometimes not clear

- without face of speaker seeing

- sometimes hardnesss

As we can seee electronic Communications has positives, and negataves.

But additionelly modern communication has quite different faults They situated in our organism. They have biology background. To theese belong:

- curvature of the spine

- decrease of vision

- heart defects

- addiction from computer

As we can see, there are a lot of dangerous factors, and troubles come from electronic communication. No, wonder that a lot of people usually more informatics suffer on different illness. Some of them suffering on modern- civilization technical suffers.

According to run the times more and more informatics build an „illness- army", which are waiting for an earlier rent, They are just a „civilization - victims". In XIX or XX Century people thought that work in coal-miner were dangerous, but today profession of informatics belong to them.

Modern technology makes humans work more dangerous than at any time before.


## 8. FUTURE

The communication phaenomen will be in the future growth permanently.

Just is the modern civilization which is more expansive and agressive.

The scientists evaluated that at the end of XXI Century the humans race will count 10 miliard people, like never before. Parrarell to such event the communication will be also bigger and bigger, till to limits of the communication like has written Brunon Hołyst, Instead of communication people will have „Larm", which we called a total civilization noise (hum).

The will be such great of number communication, like today from cosmos, and we couldn't known from they come. It is a dsorientation situation, which Werner Heisenberg has called „uncertain – principle".

Insstead the communication will have noise, noise, and noisee, because of over number of information. Already today we observed such phaenomen.

Very few people see such event, and we have actully no orientation, how to find the solution from such situation.

Probably we must look, to a new system for such situation. Perhaps it will be quantum communication, but it is our imagine. It is need to based communication on the other background different from dychotomie „zero" and „one".

It is called a zifrization process wchich is provided all over the World.

Nowadays, we obtain from cosmos miliard information, in 24 hours, but we do not known from whom, or; from whereso come they.

Few pe ople known that a lot of information does mean better knowledge. Below, we can show that such situation brings qite different events mainly; sopping the communication.


## 9. THE CLASIFICATION OF COMMUNICATION

We have two kinds of communication comes from:

- plants
- animals
- nature,

and additional from:

- humans - race
- The communication from nature is endless, and we never count them.
- But on the other hand the humans communicatio has limit.

It is very important for technician, and also for scientists.

We hope, that ist he news for all people, usually when we think about some kind of ilness like for example cancer.

Tank the communication of he nature World we obtain better knowledge what process are going in our organism. It will be very succsefull in fighting soame humans illness. The medicine oft he XXI Century could obtain a new methods.

We hope that it appear new dyscpine in sciece which treats such kind of treatment, usually in medicine.

We believe that modern quantum physic gives new solution, however we must wait fort he first steps. In some countries of the World are provide some experiment in such direction.

Now, we are waiting for the recently results. We hope they will be optimistic.

Diagnosis have already have make in some laboratories in Japan and Germany.

Scientists believe, that in the near fututure, researches confirm the fisrst results. Up to now we must are waiting what science can say.

We already know, that communications in the World is endless, and we never built it, it means limits for science. The authors oft hat paper believe, that new knowlegde quantum physics must appear touch the whole problems of communication as a separate one. We don't know excatly what kind of knowledge will be, but it must take probems of communication.

Communicatiom must become a new field of science, and we must look at any communication not only as an inromation, but quite new object for science.

It is possible, that may be a kind of „ quantum information", however it is only propose.


## 10. CONCLUSSION

In this paper we can say about communication in a large scale not only by electronic one. There are over seven miliard people nowadys, and each produce a communication. It becomes moment, when we couldn"t take communication any more. Our abilities became inefficient. So, it is clear why we have afraid of such situation. One must remember that communication World bacame larger, and large. It never stop, but became great resistance.

We don't know excatly what communication is. We have a main idea, but it has a colloqial meaning one. For a large communication we have no ideas what are really they, or: how to reach to its „credo". Pehaps in the future we change definition of communication, and also ist clasification.

Too large communication as Brunon Hołyst has written make blocked in fuency in connect. When the quantum of communication will be too much so the cnseqences will be negative for a whole el4ctronic sytem, like cars on the roads. When soamething is great the phaeanomene has also chabges.

Slowly, but consequently our electronic ststem is naturally is overworked.

In su ch situation has happed defects. We say that system is: tired.

People generally have no idea, that much Communications has makes „a noise", so it is a dangerous phaenimene. But as usuall scientists think how this problem, solution as qickly, as possible. Till now, scientists are looking for new methods how the whole troubles to reduce.

The great operatus think about it, because too much communication as we earlier have said can stop all system in connection. If we take care that over seven miliard people connect to each other, many times, so, it is clear that must become stop.

In other words saying, people can not use that all information. In this case the nature put limits, itself. Perhaps, it will be necessary to use any reduction in communication system, but actually, we have no idea how to do it.

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# Simulacra and simulation: The impact of ICT upon „radical transformation" of culture

by

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Happening before our very eyes the information and communication revolution, associated with the third wave of globalization, which Marshal McLuhan described in terms of 'global episteme', fundamentally changes (transforms) simultaneously: economic, social and cultural sphere, thus evoking the effect of synergy and convergence (interference) difficult to predict. As such the dynamics of the post-modern changes have lost its linear (cause and effect) as well as incidental character long ago, thus becoming the permanent phenomenon (an ongoing process) as well as non-linear, happening in all areas synchronous, which we are part of, therefore, it is extremely difficult to refer to them objectively, not to mention keeping up with its pace (undergoes not only the scale and scope of change(s), but also their speed). In fact, we could simply account the new development paradigm shift, referred to by Manuel Castells in terms of information society, associated primarily with, moving for the first time, beyond the physical limitations of 'time and space'-the transition from civilization (space) of contiguity to civilization (space) of flows, in which the physical space is partly replaced, partly extended (enhanced) by space of communication: symbolic and virtual (as a result, access/exchange of goods and services, as well as knowledge and information is almost immediate - instant, interactive and synchronic- and open access, "here and now" in the virtual & symbolic space through streams and nodes of flows – hence the civilization of flows).

Paradigm shift applies not only to modern economy (the transition from the industrial economy to a post-industrial one- from the production of physical goods into the economy of services, mainly intangible, towards symbolic goods) but also, and perhaps above all to culture-fundamental change of the role and resignification of culture, mainly because symbolic goods occupy a central (core) place within information civilization, not the peripheral thus far. This fundamental change does not rely only on the increasing production and consumption of symbolic goods (a significant shift in the direction of symbolic goods, both on the supply side -of production and ways of production- and demand -consumption and the ways of consumption), but on the fact, that symbolic sphere takes over the role within the mechanisms of socio-economic development, so far performed by material sphere. As such the basis for symbolic production becomes mainly a value or capital : intellectual, creative, cultural or social

exchanged (in the process) into economic capital or value. Within this almost unlimited information and communication space, and the possibility of a digital circulation of culture, culture becomes not the dialogue, but rather polilog-endless process: a plurality of narratives, interpretations, meanings, values, cognitive and social codes, thus becoming a point of reference in the world of 'liquid modernity', where "discontinuity, uncertainty and constant change being a collective experience".

The result is a radical transformation of culture as such: a transition from the 'culture of scarcity', limited by the physical (technical) realm of production and distribution, to the 'culture of excess' almost unlimited information and communication space, in which the problem is an excess of co-existing information, knowledge and symbols (the ubiquity of cultural transfer). In this situation, the digital circulation of culture becomes not only self-renewable, but also self-multiplied (intensified multiplication based on interaction, activity and on-going exchange: the more we use, the more we multiply). As a result the post-modern circuit of culture is characterized by immediate availability and the ubiquity of cultural transfer and diversity, along with the richness of content and availability of choice (convergence of culture along with divergence of technology). In this context, the phenomenon of culture 2.0 or perhaps even 3.0 (digital culture) seems to be a perfect 'experimental range' of accumulation, or anticipation of changes and developments happening within the post-modern world -space (of flows) in which collide, overlap and interfere changes: technological, cultural, economic, social and political, both at the level of the global network, as well as at the level of individual participation. As such, digital culture presents a perfect space, or a platform to search for new, and/or alternative strategies (operations), as well as the simulation of new solutions, or experiments, mainly because so called 'virtual space' is under constant change (in 'beta phase').

This gives the postmodern culture specific character, blurring the boundaries between reality and its multiplied reflection (virtual reality), between the original and a copy, the map and the territory in a constant "precession or flood of simulacra". According to Baudrillard, post-modern culture is defined by a crisis of the sign and its meaning- intensive production of signs deprived of its meaning : 'signifant with no signifie' which do not represent anything (signs freed from its reference only simulate the meaning). Enhanced multiplication of signs and images has reached such an intensity that has created a new quality: hyper-reality, which only further exacerbated this process: simulacra-sation : decay of any semiotic or metamorphic bond between the physical, psychic, and pictorial (death of the sign with no real verification possible : blurring of the boundaries between the real, semiotic and symbolic). As a result, the

post-modern culture is mainly defined by a sense of fragmentation, ambiguity and uncertainty of the world as well as the identity (subjectivity) as consequences or repercussions of diversification of language (discourse), characterized by some cracks: i.e. possibility of adaptation of multiple position to be taken by the individual as a result of the post- structural discourse. In this situation, the definition and understanding of the process (the concept) of virtual reality- not only thus far from the technological perspective, but also from the cultural, sociological and what's most important philosophical (ontological) one- becomes the key element, mainly because both the postmodern culture as well as the postmodern subject (human) is heavily immersed within this new forms of virtuality (identified mainly with technological change). According to Castells this is "not the inducement of virtual reality but the construction of real virtuality" defined as a "system in which the reality itself (that is people's material/symbolic existence) is entirely captured, fully immersed in a virtual image setting, in the world of make-believe, in which appearances are not just on the screen through which experience is communicated, but they become the experience".

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# Some consequences of the development of Internet technologies in the light of the humanist management

by

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## ABSTRACT

The statement that the Internet has a dominant role in the field of economy is a truism. However the background of this statement is a less common type of narration that takes for granted its uniquely beneficial effect on this area, as well as others, such as social or political life. An excellent proof of the dominance of this kind of narration is a project of the European Commission: *Digital Single Market, Digital Economy & Society*. The situation becomes a bit complicated when we try to widen the scope of reflection. The obvious benefits given by Internet, as the universality of access to goods or equalization of the opportunities under more careful examination turn out to be only a superficial characteristics. Because of the deeper trends in this area we can consider the situation as a breakthrough from the point of view of human civilization not only as some isolated benefits. These trends are visible primarily due to technological development and technical inventions (as this that almost immediately rise to the surface of public discourse), but they have much more far-reaching effects, very difficult to predict. An example might be here a discussion that ensued in connection with the development of engineering discipline as the artificial intelligence is. It revealed the serious ethical issues connected with the axiological systems undoubtedly belong to the cultural heritage. This less known space of events is also an important environment of the functioning of the organization.

There is no doubt that the new technologies and, in particular, the Internet (besides it is the difficult and interesting attempt to acquire a good definition of these areas), cause effects located absolutely outside the plans of the developers of innovations. To recognize them, one must first of all have the authoritative model of reality, they are the basis for, and appropriately adapted methodology of its interpretation. Thanks to these two analytical steps, it becomes possible to build a credible interpretation, which can then be a basis for a pragmatic organization that part of reality and let to manage it. This kind of tools provides the management located in

the humanities, in short called humanist management here. It is a relatively new project, which openly refers to philosophical, cultural, anthropological reflection and even to the literary studies to get the tools that extend research on the level of trans-disciplinary basis, actually the only one that can be enough to interpret such massive phenomena as the Internet. It is worth to remind that the latter can be understood in many ways: as a technology, a phenomenon or process in any perspective: historical, social or otherwise, as a discursive phenomenon, that is, as a way of speaking, etc. Humanistic management is in this part is the successor of the powerful changes in the understanding of science in the 20th century, ways to legitimize its claims, and – in wider sense –ways to deal with these problems on the epistemological level. This management is standing on the position that it is not possible to describe, understand, and manage any type of reality, without the adoption of a similar theoretical perspective, regardless how it would be difficult, or challenging in terms of competence.

The starting point of that management is the situation of man in the organization, referring to perhaps the most difficult problem which faced the human thought creating the idea of the subjectivity, the issue extensively reworked in philosophy, and at the same time a key from the perspective of modern management and technology. However, this issue is only the starting point for the adaptation of the sophisticated tools in the humanities, able to take other, complex issues which could appear as absolutely surprising from the perspective of the orthodoxy of the traditionally understood management. An example can be ontological issues. They became the subject of interest on the part of advanced information technology in the process of constructing knowledge, key from the point of view of e.g. so-called artificial intelligence (this naming manner we use here due to its popularity, but in the course of disciplined reflection science it requires much higher precision).

In this speech, an example of the synthesis of the presented here ideas will be the issue of the network, on the one hand, seen as really running technical systems, on the other hand, existing as a theoretical calculation model. This situation becomes a very important issue at a time when both of these perspectives are the meet together in the technology which is the source of data in the course of pragmatic, business processes. These data are treated holistically as a new, very promising representation of the processes and phenomena of the reality creating the new type of the world of their existence. This means that we encounter absolutely new kind of the set of ontological entities which is also possible relatively easily to formalize and predict. It becomes at the same time increasingly a part of organizational processes, where it functions as a data science.

# Session:

# ICT Impact on Culture, Education and Communication

Session Co-Chairs:

**Janusz Czerny**, College of Management "Edukacja", Poland

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# The ICT sector participation in the more dynamic economic growth in poland in perspectives of 2014-2020 years

by

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Presented study sets out a strategic perspective, the share of the sector of information and communication technologies (ICT), including manufacturing and services), the acceleration of development of socio-economic development in Poland in 2014-2020, examines the forecasts for the development of ICTs, as well as the significance of these trends. Adopted research hypothesis assumed that they should have an upward trend, and similar effects on the socio-economic development, as in developed countries.

The study aims to present the current state of the ICT sector, its share in the economy and competitiveness on the basis of financial results of enterprises belonging to this sector.

The research was based on strategic documents of public administration and statistics on the ICT sector in Poland, to which the method of analysis, the study of a single case, combining methods: monographic, document analysis and statistical techniques were applied. As a result there were defined: prospects and realities; the share of the ICT sector in the economy; channels and trends in the impact of the ICT sector on economic growth and formulated conclusions.

In sumary, the results of the research can be concluded that this sector is growing rapidly in Poland, in line with global trends, but its share in the economy is smaller compared to that of developed countries.

**Keywords**: the ICT sector, participation, dynamic economic growth, Poland, perspectives of 2014-2020 years

# Supporting active and healthy ageing: challenges for information and communication technology

by

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Population ageing is a phenomenon common to developed countries. Demographers suggest that this is an inevitable process and it will deepen in the future. Demographic changes involve a number of consequences for the economy and society, such as a significant increase in spending on pensions, health and social care. To counteract the effects of an ageing population various strategies are suggested, among others a policy of active and healthy ageing. Information and communication technology (ICT) is a critical component of the contemporary world offering a wide range of potential benefits for states, organizations and individuals. Appropriate use of ICT can not only mitigate the effects of ageing, but it can transform the demographic crisis into an opportunity for the whole society. In this paper we present an assessment of current activities on active and healthy ageing and we present possibilities for better use of ICT to support this strategy. In particular, using indicators of the Active Ageing Index we compare the situation in Poland and other European countries, and we point out the key challenges of ICT in the context of ageing in our country.

**Keywords:** ICT, support, active and healthy ageing, Poland.

Trąbka

Organizational structure as a key perspective supporting the modeling
of workflow processes - concept update and analytical tools

# Organizational structure as a key perspective supporting the modeling of workflow processes - concept update and analytical tools

by

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**ABSTRACT**

Organizational structure is the key analytical perspective in creating a model of an enterprise implementing workflow systems or Enterprise Content Management (ECM) platforms. The hierarchy of an organization constitutes the frame for defining processes simultaneously providing them with suitable resources: competences, data, material, etc. Currently there are no acknowledged open notation standards and analytical tools to support the presentation of this perspective. Comprehensive commercial approaches like ARIS or BPMS do include suitable notations and tools, however, they do not comply with the open standard condition. The most popular notation – the organizational chart (also known as org chart) does not provide, as will be proven in the article, enough analytical information and connections to other information system model elements. The problem intensifies in analytical projects run in big multi-branch organizations. The article proposes a metamodel (based on the management approach) and notation tools which could facilitate the construction of logical and physical models of a big enterprise's organizational structure. The proposed tools were practically applied at the business analysis stage of the projects, in which the author was involved. The abovementioned projects concerned typical workflow processes in administrative (office documents circulation), financial and quality assurance areas of the organization described in this paper.

**Keywords**: Workflow, Organizational structure, Org Chart, ECM, UML, BPMN

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## INTRODUCTION

Enterprise Content Management (ECM) systems and workflow (being the main technological component of ECM systems) are becoming one of the main directions of informatization in business, government and educational organizations [2,6]. Workflow tools are responsible for the dynamics of ECM platforms which means transferring content (often in the form of unstructured documents) among the platform users and within the entire organization. Workflow Management Coalition (WfMC) defines workflow in the following way: "The automation of business process, in whole or in part, during which the documents, information and tasks are transferred from one participant to others for the purposes of implementation of an action pursuant to the set of formalised rules" [23]. When analyzing the examples of ECM/workflow platforms implementations we can point to the functional areas of an enterprise they most often support: documents and cases circulation management with a central document repository, projects management, quality management (e.g. in conformity with ISO 9000), employment processes related to human resources and payroll matters, or IT services (helpdesk) management [21]. The article is going to describe a case of constructing an ECM platform for electronic circulation of administrative and financial documents and to support the quality processes in a big enterprise operating in the medical field. In the example discussed, as part of the pre-implementation stages analysis (prior to the system selection) we used the assumptions of SPARD – an analytical methodology dedicated to workflow systems [22]. It specifies that the organizational structure, apart from processes, business rules, data and concepts, is the most important aspect of the structure of a workflow system model. The organizational structure constitutes the frame for defining processes simultaneously providing them with suitable resources: competences, data, material, etc.

Currently there are no acknowledged open notation standards and analytical tools to support the presentation of the organizational structure perspective. Comprehensive commercial approaches like ARIS or BPMS do include suitable notations and tools, however, they do not comply with the open standard condition. The most popular notation – the organizational chart (also known as org chart) does not provide, as will be proven in the article, enough analytical information and connections to other information system model elements. The problem intensifies in analytical projects run in big multi-branch organizations. The first chapter of this paper offers a short overview of the available organizational structure modeling tools. One of the reasons for the lack or drawbacks of the available analytical tools may be the

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fact that the concept and function of organizational structure are not fully understood. That is why the second chapter of the paper will quote the most important definitions, functions and organizational structure elements mentioned in the area of management literature. The third chapter will present the characteristics of the organization discussed in the context of its size and scope. It will be followed by a description of the problems encountered during the analytical proceedings and the author's proposal for a notation eliminating the difficulties addressed earlier. The last chapter will conclude the efforts to create a model of the organizational structure in the project analyzed in the paper.

## ORGANIZATIONAL STRUCTURE MODELING TOOLS - A SHORT OVERVIEW

This paper's thesis is to conclude that currently there are no open notation standards to present the organizational structure for workflow/ECM systems analysis. The organizational structure is a well-known and obligatory element in comprehensive information systems design methods such as Architecture for Integrated Information Systems (ARIS) [15]. The methodology has its own metamodel of the organizational structure and a dedicated graphical notation. ARIS is a conception supported by a set of IT tools known as ARIS-Toolset [5]. In paper [14] the ARIS method was used to present an elaborate metamodel of the organizational structure and to specify it in more detail with an ontology created. The disadvantage of using the ARIS method is its commerciality and the fact it can be used (in the context of organizational structure presentation) only with a dedicated IT tool (there is a community ARIS Express version [2], however only for educational purposes).

The organizational structure is also an inherent element of the Enterprise Architecture (EA). The best-known approaches in this subject area are: the premier one, called the Zachman Framework [16] and The Open Group Architecture Framework (TOGAF) [20] with currently dedicated Archimate modeling language [10]. EA is defined as a coherent organization model integrating: the organizational goals and strategic tasks, business processes as well as information and technologies essential to the realization of these objectives [7]. EA is a holistic perspective on an organization from the point of view of four architectures: business, data, application and technology. The main purpose of EA is to design and manage the harmony of the four above-mentioned elements to realize the strategic goals of an organization and not to perform a detailed analysis and design single systems. The Zachman Framework proposes a logical arrangement of elements (the characteristic network) which should be described in the

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EA construction process [26]. The method itself does not specify what tools will be used to indicate the perspectives described. In the TOGAF approach, especially in the dedicated Archimate language, among the structure elements we can find the business actor and business role artifacts. These, however are used in the context of them being connected to functions and processes and not the internal hierarchical structure of an organization. To separate these elements from the context of the EA layer model available in Archimate, and use it to model organizational structure, seems completely ineffective.

To support the paper's thesis one may mention the fact that the Object Management Group (OMG), an organization in charge of creating and maintaining the most important modeling standards like UML or BPMN, created a working group to prepare the Organization Structure Metamodel (OSM)[13]. The metamodel itself is still at the proposal stage and does not contain a notation standard unlike the other above-mentioned OMG standards (the last update of the OSM proposal was published in 2009).

In papers within the field of economics and management and business practices the most often used notation is the long-known organizational chart. However, the author's practical experience shows that this traditional notation is insufficient when it comes to presenting all of the organizational structure functions and its connections to other perspectives forming a complete model of workflow processes. The real-life project problems connected with the use of the organizational chart notations and practical solutions to these problems are presented in the fourth chapter of this paper.

## MANAGERIAL PERSPECTIVES ON THE ORGANIZATIONAL STRUCTURE

The most common, which does not mean the most complete, definition of the organizational structure concept can be found in Wikipedia (Polish edition) where we can read that the organizational structure is an arrangement of positions and organizational units they form within an organization. Basing on an analysis of management literature the chapter will conclude whether the organizational structure is really just an arrangement of positions and organizational units or whether it reaches beyond that and fulfills many additional functions. The authors [9,11] indicate that the organizational structure should be considered in a wider context and define it as a "management tool" organizing the whole system, which in practice is included in the management system. Stoner and Wankel [17] concluded that the organizational structure designates the assignment of work within the system, establishes the necessary

connections between various functions and activities, shapes the division of power, orders the hierarchical system components and settles the responsibility scheme. Moreover, the organizational structure guarantees a continuity in the tasks realization, thus allowing the system to survive in spite of employment fluctuation and coordinates its relation to the surroundings. Yet another definition was proposed by Stabryła [17] who says that the organizational structure is all of the established dependencies between the organization's system components grouped into organizational units and business units of higher rank in a way enabling achieving goals of the whole. A wide range of the functions fulfilled by the organizational structure was presented by Stabryła [18]. An analysis of the managerial approach to organizational structure as well as the appearance of the organizational scheme notion may lead to a conclusion that colloquially the term 'organizational structure' is overused in place of the organizational scheme concept. The organizational structure is a much broader and complex idea. The next part of the paper will, still on the basis of articles from the management area, define the fundamental elements of organizational structure in order to present the metamodel (Fig. 1). The metamodel has been called managerial since it attempts to show most of the aspects referred to in this chapter. In the presented metamodel the following concepts have been used: Organizational position, Organizational unit, Business unit, Person, Role - as defined by Kozina and Nalepka [11].

It is worth comparing the metamodel presented below with the proposals of the OMG [13] working group and the paper by Abramowicz and colleagues [1], where an ontological description of organizational structure was proposed for the Semantic Business Process Management (SBPM) purposes.

Trąbka

Organizational structure as a key perspective supporting the modeling of workflow processes - concept update and analytical tools

Fig. 1. Management Organizational Structure Metamodel
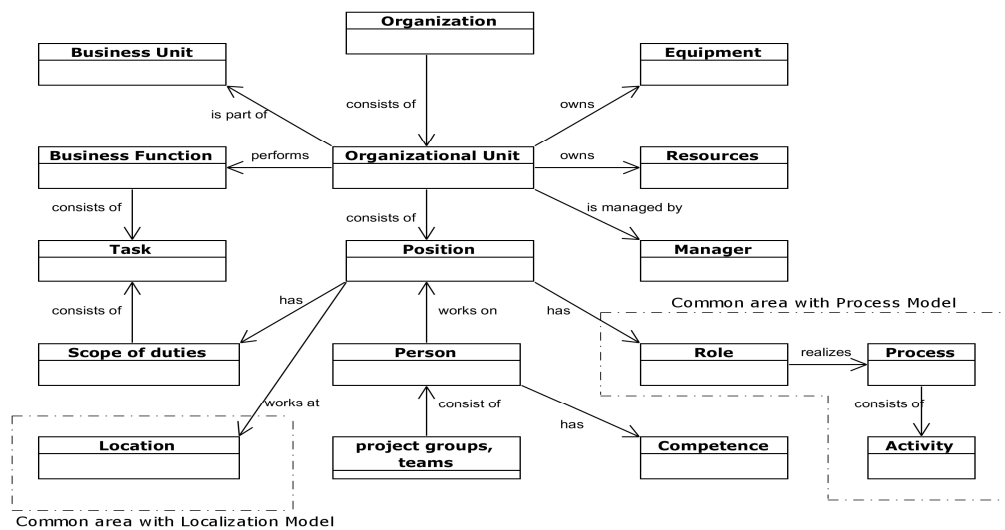


Source: Own research

## THE CHARACTERISTICS OF THE ANALYZED ORGANIZATION

The organization analyzed in the paper is the biggest Polish network of medical diagnostic laboratories. The network consists of 140 laboratories (offering 2,500 tests of all kind) and 400 collection stations. The network performs 28 million tests a year and serves 10 million patients. The enterprise employs about 4,000 employees and has been on the market for over 20 years. The places where the company operates are proportionally located across the territory of Poland. Such a complex physical location structure as well as the organization's management style have led to developing a division of the organizational structure into the Headquarters and 8 Regions (which cover the whole country). Each of the Regions is divided into Branches operating in one or two voivodeships (provinces). A Branch is made up of a couple of Laboratories located in bigger cities it serves. Each laboratory is divided into laboratory units (labs) dedicated to performing various kinds of tests (general, microbiology, hematology, etc.) and has its internal and external (regional) Sample Collection Stations. Each of the laboratories has also an Administration, Courier and Warehouse Department.

The project was split into a few stages dealing with: the incoming and outgoing correspondence, so called office documents circulation, financial documents circulation and acceptance (purchase and business trip invoices, etc.) and quality assurance documentation (with the required creation, acceptance and distribution processes). The project's requirement was to create a tool uniform and integral in all areas, and to build a system which ultimately

could be developed by the in-house IT department. The project started with a Pre-Implementation Analysis conducted by the company itself with the assistance of external experts. The stage was supposed to prepare the project's assumptions and specifications for the most important processes in the above-mentioned areas. The author of the paper took part in the stage of analytical documentation preparation as an external expert.

## A PROPOSAL FOR ORGANIZATIONAL STRUCTURE MODELING TOOLS ILLUSTRATED WITH EXAMPLES

### Org chart improvement (tuning)

Organizational chart (often called organization chart, org chart or organigram) is one of the oldest (described already at the beginning of the 20th century) graphical notation used to present the structure of business organizations. In 1922 Haskell and Breaznell [8] in their handbook on business schemes defined the notation assumptions in the following way – "The organization chart is a diagram showing graphically the relation of one official to another, or others, of a company. It is also used to show the relation of one department to another, or others, or of one function of an organization to another, or others". Since then nothing has changed in the notation itself and due to its simplicity org chart is the most popular business diagram - most of the companies in the world should have such a diagram in their documentation.

Org chart is a remarkably simple notation by having just one artifact representing a position or organizational unit and a single relation between the two. The aim of the paper is to present the organizational structure of a multi-branch organization employing the org chart notation. The obstacles encountered while realizing the project (which we attempted to eliminate) are also discussed. The org chart transparency and the fact businesspeople are commonly familiar with it prevails over the introduction of a completely new notation such as, for example, a class diagram used in the metamodel presented above (Fig. 1). At the analysis stages it is far more important to jointly understand a phenomenon than to try to define it extremely precisely.

### Organizational structure decomposition

In the case analyzed it is utterly impossible to present a complete organizational structure in one diagram since the organization in question consists of 740 organizational units. The attempts to create a uniform diagram always ended in showing just a piece of the organizational structure (without indicating the part missing) or creating and extensive map comprising a

couple of A4 pages, thus making it illegible and unverifiable. In this kind of situation, the author's first proposal is to use decomposition - a technique of dealing with complexity of the systems presented, known since the times of structural methodologies [25]. The basic principle of decomposition is to show a big system fragmentarily on a few levels. Unlike in the case of processes models, decomposition cannot be directly introduced to the organizational structure. The main (more general) processes on the higher levels are decomposed into more specific ones on the lower levels. In order to make the organizational structure decomposition more comprehensible and controllable, the author has introduced so called organizational structure pattern which will define the specificity of each particular level, i.e. what types of organizational units the user might expect there. The pattern is supposed to map the main processes (process level 0), however, it does not reflect the substantial areas of the organization's activities but determines what types of organizational units will appear on the particular levels. The pattern developed is presented in Figure 2. The diagram below uses a fictitious name of the company as the case study company agreed to publishing the paper on the condition its name is not disclosed.

## Fig. 2. Organizational Structure Decomposition Pattern
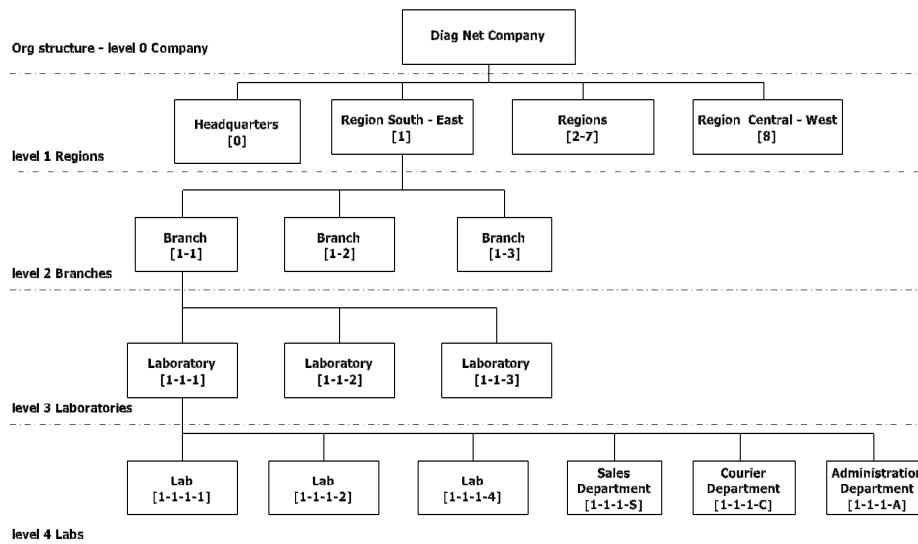


Source: Own research

Another advantage of the organizational structure decomposition is the fact it can be created independently for different areas of an organization by different analytical teams. The division is made according to the vertical arrangement – for a Region, a Branch, etc. During the analytical works

designated employees created a decomposed organizational structure for their own Branch, that is from level 2 downwards. Figure 3 presents a diagram created for one of the Branches.

**Fig. 3. Detailed organizational structure for a single Branch (level 3)**
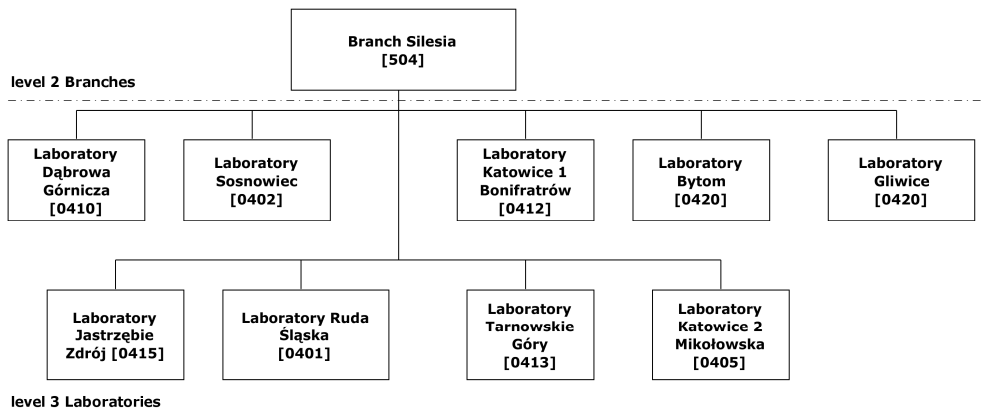


Source: Own research

## Stereotyping

Another problem to be found in the org chart notation is the single notation symbol denoting the Position or Organizational Unit, and the single kind of a usually unnamed relation. In the case of multi-element diagrams, it becomes difficult to recognize what kind of element we are dealing with as there is only its name to help us. In the metamodel proposed above (Fig. 1) a few additional concepts were introduced vital to a complete representation of the organizational structure's function (Business Unit, Person, Role, etc.). To add these additional elements to the basic org chart notation symbolism would mean a complete loss of the diagram's legibility. Colors and stereotypes, known from UML, may be a solution to the problem. Colors in UML notations were proposed by Coad [4]. Stereotype is one of the three extensibility mechanisms described in the UML standard [12]. Stereotypes are used to classify or tag the existing elements of an object model and introduce new modeling categories deriving from the ones already present [24]. Stereotyping in non-UML diagrams was described in [27]. Org chart is not a UML diagram, however, the use of stereotypes to name the already functioning artifacts and add new concept categories (from the metamodel proposed) may affect its transparency and expose a completely new information value of this tool. The technical names of stereotypes are put between (<< >>) characters. An additional proposal is to name relations and introduce new types of these (a different symbolism) to make them more comprehensible to the receivers. In the basic org chart notation there is one unnamed type of relation denoting the fact of an organizational unit consisting of other subordinate units. In the

case of a position the relation means that it is either superior or subordinate in relation to another position or that an employee works in a particular organizational unit. Realistically, the relations between positions may also mean advisory, informative or subordinate (entitled to substitute others) functions, which will be discussed below. The diagram in Figure 4 presents a single Laboratory (level 4 of the organizational structure) with its positions and indication of the particular employees assigned to them. Since the main goal of the analyzed project was to build a workflow processes model, the diagram marks the roles a unit performs in the process of material purchasing documents circulation.

**Fig. 4. Org chart of a single Laboratory with the positions, persons and roles participating in the process of accepting material purchase documents**
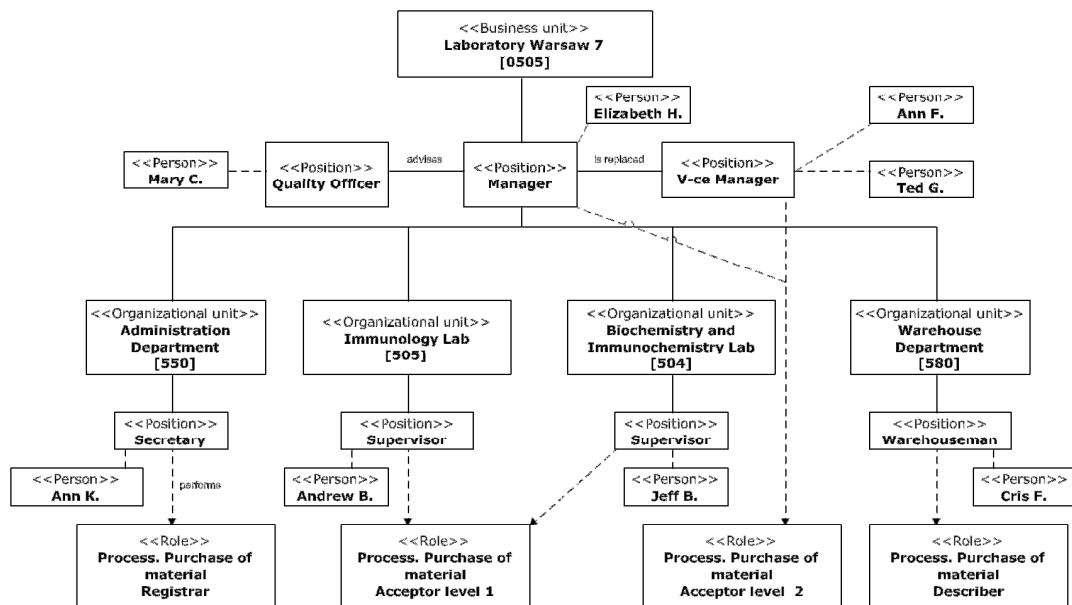


Source: Own research

It is worth noticing that some of the relations in the basic org chart notation between positions have been named when they present a type different from subordination. The diagram shows the Laboratory Manager's deputies. A deputy is a subordinate who under certain circumstances gains all of the powers of the position they substitute. This particular type of relation is very important in the case of a workflow process which 'stumbles' when a given employee is unable to perform the task they were delegated (because of illness or a leave). The processes engine must recognize to whom it can delegate the task during the absence of one of the employees responsible.

The approach proposed above has proven remarkably useful for creating analytical documentation and training future system users. Each of the managers created a scheme for

their own unit and various workflow processes in which it might participate. During trainings the prospective users could understand the process more easily as they saw themselves in the organizational structure and a role, which would not be possible in a BPMN process diagram.

## CONCLUSION

The case analyzed shows that organizational structure modeling is a key task to perform in projects regarding workflow systems and, in general, ECM platforms. According to the authors it should be the first step to be taken since the structure of an organization, its hierarchy and relations of all kinds can be more complex than the processes it realizes. The aim of the paper was to present simple and open analytical tools which would facilitate the realization of the set task. It seems that the proposed tuning of the org chart notation meets the criteria of completeness, simplicity and openness. The author's future articles will focus on the problem of localization structure for the purposes of workflow processes. The perspective increasingly gains in importance for organizations operating in many physical locations within one country or even globally.

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Psychosocial factors affecting decision-making participation
among MIS users. Preliminary exploratory study in Polish army

# Psychosocial factors affecting decision-making participation among MIS users. Preliminary exploratory study in Polish army.

by

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**ABSTRACT**

The aim of this preliminary study is to explore social factors - selected psychosocial determinants of decision-making participation as collectivism and individualism in the process of the Polish Army units command and control.

The conclusions of the research will develop methods to support the development of leadership competencies, staff recruitment processes, and factors necessary to promote participatory decision-making styles on various levels of management.

The study sample consisted of 168 managers of military, using MIS (Management Information Systems), selected randomly, employed in five military units in the region of Lower Silesia, Lubuskie and Poznan.

The study included soldiers serving in management such as unit the commander, deputy commander of the unit, the commander of subunits to the platoon level, heads of divisions, departments and sections of the military employees in positions which are subject to at least two people. All respondents were IT users.

The most important research questions concerned the impact of collectivism and individualism (both egalitarian and hierarchical), on military managers' readiness to conduct participatory decision-making processes.

The most important finding of current study indicated that collectivism and individualism (egalitarian and hierarchical) affected the level of decision-making participation of SPP. Managers with a high level of individualism hierarchical require less participatory decision-making process, probably due to the need for their uniqueness associated with the competition.

While managers with a high level of collectivism egalitarian prefer to engage subordinates in the decision-making process according to common goals and mutual dependence with others.

The results of our study expand existing knowledge and research stream on participatory decision-making process in the the modern military army in transition countries. The conclusions can be applied by educators and military MIS managers to improve and enhance the operational efficiency of the army, as well as to improve the image of the Polish army.

Keywords: psychosocial factors, decision-making participation, MIS users, exploratory study, Polish army.

## INTRODUCTION

One of the inseparable components of the organization is the management process. The essence of the management process is decision making. Decision-making processes occur in organizations, not only economic, but also social or religious and military. In contemporary Polish army increasingly important becomes subordinates participation in the decision-making in the tasks.

### *Decision making*

Decision making is the essence of the process of managing organization "manager works when making decisions. Sometimes these are decisions routine, which take the manager may not even notice. But they can also relate to the future existence of the company and require years of systematic analysis. Either way, management is always the decision-making process" (Drucker, 1994, p. 376).

The classic model of decision called model normative indicates how rational people should behave in an ideal world, that is assuming that people excelled uses her available to them the message, they can calculate the probability, and finally take the appropriate decision (Stompór-Świderska, Witkowski, 2011). Exploration actual selection, which is done by people, indicates that their choices are often made in a situation of insufficient assurance (Tversky and Kahneman, 1986).

There are many models of decision-making, defining the different phases of operations management (Czermiński and Trzecieniecki, 1974; Kurnal, 1975; Sterniczuk, 1980; Sosnowski

for: Zdyb, 1993; Sosnowski for: Stoner, Freenab, Gilbert, 2001; Targalski, 1987). Manager accurately identifies and identifies the decision-making situation, sees different options for action and is able to assess each of them in terms of the reality of performance and its consequences. In addition, after analyzing all the opportunities manager selects the best alternative, making the later stages of its implementation and in the final stage of the assessment of the implications of their selection (Griffin, 1996).

### *Decision making in the military organization*

The decision making process in the military organization is defined as a whole projects for command carried out by organizational units and individuals function in positions of command within the system of command. From an operational point of view, the process of proving treated as a decision cycle typical for all levels of command, consisting of periodically repeated phases, stages and activities which include: positioning, planning, tasking and control (Kręcikij, 2007).

The issue of decision-making in the army reflected in the study, among others, Paul K. Davis, Jonathan Kulick, Michael Egner (2005), who studied at the United States Air Force Research Laboratory (AFRL) in the planning of their research programs, and more specifically, the development of methods and tools for decision support. Also, Christopher Paul (2004), which explains the impact of organizational and institutional decision-making processes of military intervention. Strzoda, Krakow and Spustek (2012), describe the possibility of using modeling and computer simulation to support the military decision-making process. While Colonel William J. Cojocar, (2011), highlights issues of adaptive leadership in making military decisions.

### *The phenomenon of participation*

The phenomenon of participation is becoming more popular scientists, notably in economic sciences (Moczulska, 2011; Chyłek, 2011; Szelągowska-Rudzka 2011 2014; Ignyś, 2014). The introduction of participation in the life of the organization results in increasing the economic efficiency of the organization (Ogbeide, Harrington 2011; Skorupińska, 2004; Szelągowska-Rudzka, 2014), creating the possibility of meeting the needs of higher-order subordinates (Mendel, 2001; Wratny and 2011, Sheepskin, Jończyk, 2011) leads to trust and tolerance (Weber, Weber, 2001), and to resolve organizational conflicts through negotiations (Yeatts, Hyten, 1998), it contributes to the increase of knowledge about the company among

employees (Allen, Lucero, Van Norman, 1997) and higher the effectiveness of decision-making (Vroom, Yetton, 1973; Vroom, Jago, 1988). It is also noted that the low level of participation decreases job satisfaction and increases the likelihood of leaving the company (Appelbaum et al., 2013). The participation can only speak in the multi-agency action. Always played roles in the process of participation are active roles. This is due to the specific nature of co-participation, since only the active participation and the contribution means that we can become involved in some action (Mączyński, 1998; Letkiewicz, 1999). According Rudzka (2015), the staff overlooked in the decision-making process, treated only as the implementers, will not lead to the expected benefits in terms of development of the organization.

The authors work with management very differently define participation. In broad terms, it is "to influence the partner which is the opposite of unilateral decision-making" (Wratny, 2002, p 15).

Referring to the views of John R. P. French's Joachim Israel and Dagfinn Asa (1960), Victor Vroom and Arthur Jago (1988), they have defined it as a process of joint decision-making by at least two people.

Participation is closely linked with the style of leadership. The management style is all relatively stable and purposeful ways to influence the manager to workers dependent on them in order to induce them to perform the tasks set by the organization (Mroziewski, 2005). Historical already typology of leadership styles proposed by Ronald Lippita and Ralph K. White (Mika, 1984), was the first attempt of classification where you extracted the democratic and autocratic ways superior behavior towards subordinates. The results of the research Lippita and

*Leadership styles in the context of participatory*

White were used by Brown (1962), which is based on observations of managers in addition to the division into three basic styles such. Autocratic, democratic and dodging, distinguished addition autocrats raw benevolent autocrats, and autocrats inept. In turn, the concept developed by George Kurnala (1969) contained a dichotomy between leadership styles: authoritarian and integration.

Among the many classifications of leadership styles as the basis for discussion (and research) we accepted in their work model Victor Vroom, Philip Yetton and Arthur Jago, (1973, 1988) in which there are factors relating directly to the participation of employees in decision-making and its intensity. In their model, the authors have identified the management styles

characterized due to the participation of workers in decision-making (Table 2, Victor Vroom, Philip Yetton and Arthur Jago, 1973, 1988; Mączyński, 1996).

Employee participation in management are conducive to both democratic and consultative (in both forms) management style due to the fact that they allow you to adjust the scope of participation of employees in the management of specific conditions situational, taking into account attributes such decision problem as the quality of decisions, information manager, degree structure the problem, the acceptance of the decision on the part of subordinates, assessment of the likelihood accept an autocratic decision, the compliance of the subordinates of the organization's goals and the conflict among subordinates (after Szelągowska-Rudzka, 2015).

### *What affects the manager that decides to allow workers?*

A subjective factor, which in our opinion has an impact on the choice of behavior participatory or authoritarian collectivism and individualism is hierarchical and socially aware.

According to Krystyna Adamska, Sylwiusz Retowski and Roman Konarski (2005), individualism and collectivism are concepts that relate to a wide range of social behavior and explain it by pointing to some fixed characteristics of individuals. This social orientation, which are shaped culturally and strengthened in the process of socialization, determine what kind of readiness for social behavior will be characterized by the entity. Individualism and collectivism are two separate dimensions (Triandis, Bontempo, Villareal, Asai, Lucca, 1988 Traindis McCusker, Hui, 1990; Triandis 1993; Reykowski, Smolensk, 1993; Realo et al. 2002), and not as traditionally thought (Hofstede, 2000, 2005; House, Hanges, Javidan, Dorfman, Gupta, 2004; Popper, 1993; Waterman 1981) opposite ends of the same size, which can be described as a proportion of group members own and foreign (strong differentiation-poor differentiation).

**Individualism** - the principle of philosophy and ethics, according to which the human being is considered to be the highest good. The opposite of individualism is collectivism. individualistic approach implies the principle that everyone is responsible for himself. (Oxford Dictionary, 2016).

- **Individualism egalitarian** (IR) is characterized by people focused on its own interests and showing the need to be unique, but not by obtaining high status. Units of this type pursue their own goals, rejecting the limitations imposed on them group.

- **Individualism hierarchical** (IH) - the people with high individualism hierarchical realize the need for uniqueness and achieve a high social position through competition, and differentiate themselves from others regardless of their place in the social hierarchy (Triandis, 1995), tend to "victory above all" (Hwang, 2003). They value the strength, power and joy of life.

Individualists perceive the social world as a collection of independent units, based self-esteem on the successes achieved in the fight for advantage. Clearly differentiating themselves from others, guided in their activities own goals or needs. Therefore, it can be expected that managers of individualistic orientation are more likely to choose authoritarian styles of decision-making.

**Collectivism** - individualism contrasted with the view emphasizing the role of communities, groups and communities (Oxford Dictionary, 2016).

- **Collectivism egalitarian** (KR) - refers to people who perceive the great similarity between himself and others. Particular importance is attributed to other common goals and mutual dependence, but it is not easy to come their submission to authority (Triandis 1996).

- **Collectivism hierarchical** (KH) - we are dealing with people whose activity contributes to the common good, so that the effect of the actions of the whole group is greater than the sum of its members. People of this type are ready to perform extremely unacceptable, expectations of leaders, if only as they are for the benefit of the whole group. They emphasize the importance of the integrity of the group and their willingness to sacrifice their own goals for the purpose of the group is accompanied focus on intergroup competition (Hui, 1990).

Individualistic approach implies the principle that everyone is responsible for himself.

The collectivist approach assumes the principle of shared responsibility (Reykowski, 1990).Another definitional feature of individualism and collectivism is the type of relationship maintained by other people. We can distinguish respectively relationships of exchange and communal relationships (Clark, 1984, Clark 1985 Clark, Powell, Mills, 1986, Clark, Powell, Oullette, Milberg, 1987). They differentiate them the rules of transfer benefits (usually give and take). According to the standards of exchange, people should be rewarded in proportion to the contribution made by the task. In contrast, standards Municipal indicate the need to consider the needs.

Weight attitudes and standards in the regulation of social behavior are the last thing definitional individualism and collectivism. Wider dimension can be described as a juxtaposition of attitudes, beliefs, emotions and preferences, norms and social roles (Suh, Diener, Oishi, Triandis, 1998). Equality and hierarchical relations are recognized by Triandis and Gelfand (1998) as another important property of individualism and collectivism, decisive for their specific nature.

Hierarchical and socially aware nature of the relationship indicates a certain type of individualism and collectivism. None of them cannot be considered the best, each one is functional for a different situation. First: IR (individualism equivalence) is characterized by people focused on its own interests and showing the need to be unique, but not by obtaining high status. Units of this type pursue their own goals, rejecting the limitations imposed on them group. Those which can be attributed to the high H (hierarchical individualism), the need to realize the uniqueness through competition, which may result in creative and engaging a lot of effort in the implementation of tasks. KR - collectivism equivalence refers to people who perceive the great similarity between himself and others. Particular importance is attributed to other common goals and mutual dependence, but it is not easy to come their submission to authority. In the case of KH (hierarchical collectivism) we are dealing with people whose activity contributes to the common good, so that the effect of the actions of the whole group is greater than the sum of its members. People of this type are ready to perform extremely unacceptable, expectations of leaders, if only as they are for the benefit of the whole group. They emphasize the importance of the integrity of the group and their willingness to sacrifice their own goals for the purpose of the group is accompanied focus on intergroup competition. This kind of attitude can foster selecting managers' participatory decision-making styles.

What is important for our analysis, similarity of certain categories but the differences in individualism and collectivism both an equivalence and hierarchical associated with predisposition personality traits and not cultural.

Cross-cultural research on the participation decision, then, were aimed at, among others, verification of the hypothesis Hofstede (1980, 1984) depending on the style of leadership of the cultural variable called power distance (power distance). In Poland, we studied 399 executives. This sample was then subjected to a comparative analysis of cross-cultural research project GLOBE participation in decision-making, including 2843 managers representing seven countries: Austria, Germany, Switzerland, France, United States, Poland and the former Czechoslovakia (Mączyński. 1996). In order to detect differences in the styles of decision-making among managers representing seven countries, was used method of diagnosis of

preferred styles of decision-making, as a set of hypothetical decision problems Set 5 worked out on the basis of model of participatory decision-making Vroom-Yetton (1973).

Previous studies the evolution of the style of management in the context of participatory decision-making in Poland was conducted among managers in the civilian reality (ie. Studied how economic organizations and their managers reacted to the changes taking place in Poland related to the political transformation 121 people - prof. Jerzy Mączyński, University of Wroclaw in 1993 / 1994.) as well as in the Police (measuring units managerial executives Police 272 persons - Dr. Arkadiusz Letkiewicz, Police School in Szczytno, 2006).

Military with a specific hierarchy for each other is a very interesting area of research used by persons demonstrating styles participatory decision-making.

The process of command is clearly defined in military regulations. It is a series of information and decision-making, carried out by the commander, the same at all levels of command and consists of repetitive execution phases, stages and activities (Krzysztof Grabowski, Czeslaw Dabrowski, 2008).

Four constituent phases include: positioning, planning, tasking and control.


*Questions and hypotheses*

Each commander will order before you carry out the thought process, the result of which is the decision. In many cases, the commanding obtain the necessary information from their subordinates, sometimes discussing the problem individually with some of them, eg. Experts in the field. Is the individualistic or collectivist lifestyle can have an impact on decision-making by the people whose role is to serve in the defense of the homeland? How much they are willing to take into account the opinions of subordinates? As far as the pattern of effective leadership, in fact, civil transferred to the hierarchical organization of the Polish Army? How much true is the concept, according to which organizations of a military nature there are numerous situations where only the superior decides, or is occasionally assisted by subordinates?

Thus, to find answers to these research questions and test the relationship between the CPS and SPP in Poland, in the process of the Polish Army units command and control, we propose the following two hypotheses:

The authors formulated one main hypothesis and three sub-hypotheses:

- Hypothesis 1 (H1): Social factors - selected psychosocial determinants as collectivism and individualism (CPS) affect decision-making participation (SPP) in the process of the Polish

Army units command and control.

People with high collectivism an equivalence particular importance attributed to other common goals and mutual dependence, and not easily surrender to the authority. Therefore it can be assumed that:

- H1.1.: Managers characterized by collectivism will be an equivalence evinced a greater willingness to choose leadership styles of participatory (CII GII).

High collectivism hierarchical indicates a willingness to implement far not accepted the expectations of leaders, if only for the good of the whole group. Accompanied by a focus on competition Group (Adamska, Retowski, Konarski, 2005), so we can provide that:

- H1.2: Managers characterized by collectivism hierarchical be evinced a greater willingness to authoritarian behavior (AI, AII).

People characterized by individualism, an equivalence pursue their own goals rejecting the limitations imposed on them group. They value independence (Adamska, Retowski, Konarski, 2005). While those with high individualism hierarchical realize the need for uniqueness through competition, and differentiate themselves from others regardless of their place in the social hierarchy (Triandis, 1995), tend to "victory above all" (Hwang, 2003). It can therefore be assumed that:

- H1. 3: Managers characterized by an equivalence of both individualism and hierarchy will be evinced a greater willingness to choose styles authoritarian (AI, AII)

The results of our preliminary exploratory study seem to fill the gap in the scientific literature related to existing knowledge and research stream on participatory decision-making process in the modern military army in transition countries.

Our research model is presented in Figure 1 (see Table 1 and Table 2).

Our preliminary study answers these hypotheses on the basis of the testing of the data from quantitative structured survey conducted among MIS users of the Polish Army units command and control. The preliminary study results, conclusions, contribution and discussion and new concept for future research are described in the following sections.
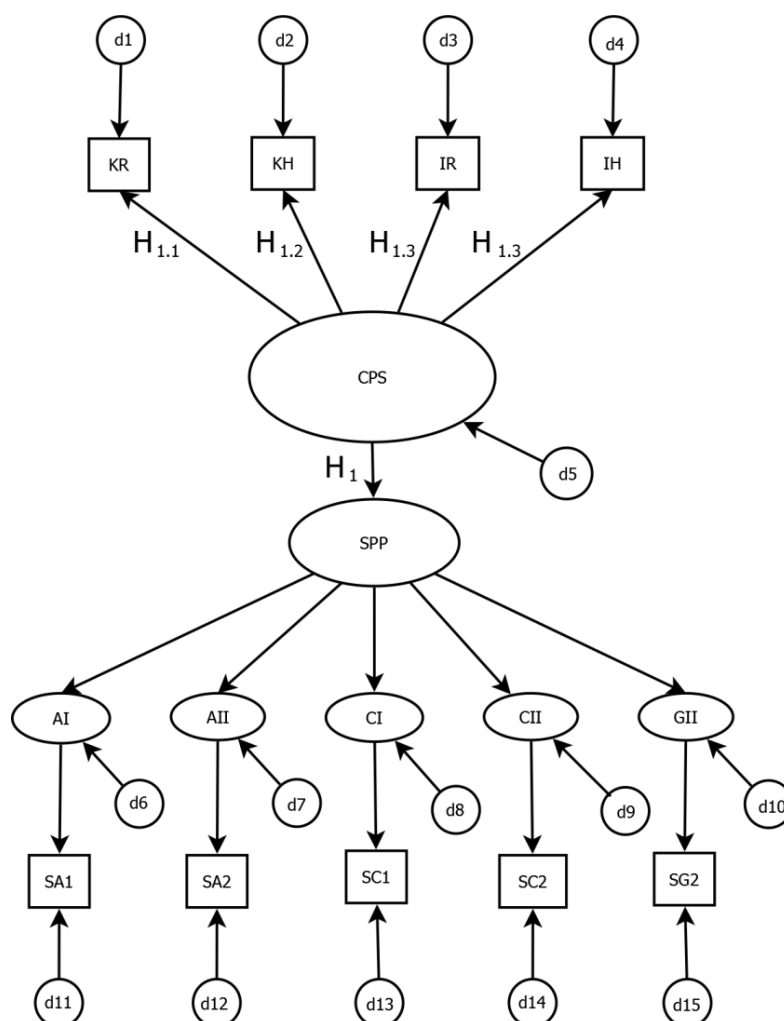
**Figure 1. The conceptual model**

## METHODOLOGY

To carry out the study used the following methods.

A set of hypothetical decision problems (SET 5)" (Problem Set), is a method which allows to determine a person's preferred style of decision-making test. The authors of the model (Vroom - Yetton, 1973) every style decision marked the Roman capital letter and a number. Autocratic style was designated A (autocratic); consultative style symbol C (Consultative); while the G symbol indicates the style group (group). Style: autocratic and consultative additionally have two options marked with Roman numerals I and II (AI, AII, CI, CII, GII).

The method was adapted to the conditions of Polish Jerzy Mączyński (1988), on the basis of the method Vroom - Yetton (1973). The set consists of thirty-one-page scripts decision

problems, designed so that each of them had a peculiar and a unique combination of situational variables. Their chosen style of decision-making person tested marks in the answer sheet by entering a cross in the appropriate column corresponding to the selected style of decision-making.

Using Set hypothetical decision problems "SET 5" it is possible to accurately determine a person's preferred style of decision-making test. The level of participation, decision-making can be determined on the quantitative scale. The numerical values for the ends of this scale have been set arbitrarily by the creators of the model of participation and decision-making Vroom Yetton and they form a numerical sequence. Each style of decision-making is assigned a specific numerical value on the scale of participation. Style AI - 0 points, AII - 1 point, CI - 5 points, CII - 8 points, GII - 10 points, summing them and calculating the arithmetic average based on partial results concerning preferred by the person tested style of decision-making for each of the thirty-decision problems, we get the result: the average level of participation (SPP), indicating a propensity for participatory decision-making of a subject.

To measure the dependent variable SPP - the authors used the method adapted to the cultural and organizational conditions in Poland by Jerzy Mączyński (1988, Table 2), on the basis of the method Vroom - Yetton (1973). To measure independent variable CPS - the authors applied KIRH - Questionnaire to measure egalitarian and hierarchical collectivism and individualism by Krystyna Adamska Silvius Retowski, Roman Konarski (Table 1 of current research). The analysed dimensions are presented in Table 1 and Table 2.

### *Research Questionnaire Adaptation and Testing*

The authors decided to use questionnaires that were previously used successfully in different cultural circumstances, and have been adopted by Polish authors, in the Polish cultural conditions. However, the authors explored the discriminant power, validity and reliability of research tools used, with positive results. The validation analysis comprised the method of competent judges, items discriminatory power (analysis of variance – most of the dimensions have AVE>0.2), analysis of correlations between items and global sum, scales validity (CFA, measures of RMSEA<0.1) and reliability (Cronbach's α) analysis. For most of dimensions, standardized Cronbach's alpha coefficients were greater than 0.7, (Kowal and Gurba 2016; Kowal and Keplinger 2015; Kowal and Roztocki, 2015a, 2015b). The analysis of initial pilot study indicated satisfactory results for further research.

| Dimension - Construct | Observable Measured Variable – Sum of Points | Examples of Items - Statements |
|---|---|---|
| CPS | KIRHIR | IR: egalitarian individualism - examples of statements: *You have to live their lives independently of the others. This is what happens to me is my own affair.* |
| | KIRHKR | KR: collectivist egalitarian - individualism egalitarian - examples of statements *I like to share bits and pieces of my neighbors. Important for me is the success of my co-workers.* |
| | KIRHKH | KH: collectivism hierarchical and egalitarian individualism - examples of statements *Usually I do what pleases my family, even if I hate what I'm doing. Usually I spend their own interests for the interests of my group / team* |
| | KIRHIH | IH: individualism hierarchical-egalitarian - examples of statements *It is important for me to do my job better than others. I am pleased to work with other demanding competition.* |
| All items are measured as sums of points given by respondents | | |

**Table 1. Construct of CPS According to Krystyna Adamska, Sylwiusz Retowski and Roman Konarski (2005)**

| Dimensions of SPP | Dimension – Latent Directly Non-observable Variable Name | Observable Measured Variable – Sum of Points | Interpretation |
|---|---|---|---|
| Autoritarian Style | AI | SAI | a) purely autocratic (AI) - the Superior alone decides on the basis of the information available, |
| | AII | SAII | b) almost autocratic (AII) - manager also decides if, but after gathering information from employees without explaining the nature of the problem, |
| Consultation Style | CI | SCI | c) nearly consultation (CI) - a decision postponed precedes the discussion of the problem individually with employees in order to know their opinions and suggestions, |
| | CII | SCII | d) a purely consultative (CII) - before making an independent decision manager meets with all employees to collectively discuss the problem, |
| Participatory, Democratic Style | GII | SGII | e) total participatory (Bang, democratic) (GII) - a decision is taken collectively (groups) by the supervisor and his subordinates. |
| All items are measured as sums of points given by respondents | | | |

**Table 2. Dimensions of SPP (Adapted by Mączyński (1996))**

## Statistical Methods

Statistical methods included descriptive statistics, point estimation, confidence intervals, hypotheses verification and multivariate analyses including among others correlations, regression analysis, Confirmatory Factor Analysis CFA and Structural Equation Modelling SEM according to measurement scales (Kowal, 1998). For this study, the most important and significant results were presented.

# Results

## *Participants and Data Collection*

The study sample consisted of 168 managers of military, using MIS (Management Information Systems), selected randomly, employed in five military units in the region of Lower Silesia, Lubuskie and Poznan (Table 3). The study included soldiers serving in management such as unit commander, deputy commander of the unit, the commander of subunits to the platoon level, heads of divisions, departments and sections of the military employees in positions which are subject to at least two people. All respondents were MIS users. All testing took place in the barracks at the designated purpose of the conference rooms. Conducting social research in the Ministry of National Defence required to obtain an individual authorization issued by the Secretary of State of the Ministry of National Defence, which I obtained. The study included soldiers (officers and NCOs) serving in management such as unit commander, deputy commander of the unit, the commander of subunits to the platoon level, heads of divisions, departments and sections of the military and civilian employees in positions which are subject to at least two people.

| Variables and categories | Quantity | Percent |
|---|---|---|
| **Age in years: mean 36.5, standard devation 6.42** | | |
| 19-27 | 6 | 3.57 |
| 27-34 | 57 | 33.93 |
| 34-41 | 60 | 35.71 |
| 41-48 | 40 | 23.81 |
| 48-56 | 5 | 2.98 |
| | | |
| **Gender** | | |
| Male | 163 | 97 |
| Female | 5 | 3 |
| | | |
| **Education** | | |
| Secondary education Civil | 24 | 14.29 |
| Secondary education Military | 9 | 5.36 |
| NCO training course | 41 | 24.40 |
| Other secondary school education | 2 | 1.19 |
| Master degree Civil | 36 | 21.43 |
| Master degree Military | 42 | 25 |
| Education officers course | 12 | 7.14 |
| Other higher education | 2 | 1.19 |
| | | |
| **Military body** | | |
| Officer | 80 | 47.62 |
| N.C.O. | 85 | 50.60 |
| Serial | 3 | 1.79 |
| | | |
| **A place of service to soldiers** | | |
| Sub-unit military | 125 | 74.40 |
| Military Staff (sztab) | 43 | 25.60 |

**Table 3. Sample Characteristics (N=168)**

### *The levels of CPS and SPP*

The Table 4 shows descriptive statistics and average levels of SPP, CSP and its subscales.

| Variables | Mean m | Median me | Rank r (0-1) | Minimum | Maximum | Standard Deviation STD | The Coefficient of Variation of Average Vm | Skewness | Kurthosis |
|---|---|---|---|---|---|---|---|---|---|
| KIRHIR | 43.99 | 45.00 | 0.70 | 15.00 | 59.00 | 7.64 | 17.36 | -0.66 | 0.64 |
| KIRHKR | 41.90 | 40.00 | 0.54 | 15.00 | 75.00 | 16.31 | 38.92 | 0.18 | -1.12 |
| KIRHKH | 42.31 | 42.00 | 0.60 | 19.00 | 61.00 | 7.69 | 18.17 | -0.01 | 0.30 |
| KIRHIH | 46.94 | 48.00 | 0.75 | 16.00 | 63.00 | 11.78 | 25.09 | -0.41 | -0.76 |
| CPS | 1.58 | 2.00 | 0.40 | 0.00 | 4.00 | 1.03 | 65.36 | -0.08 | -0.89 |
| AI | 3.65 | 2.00 | 0.37 | 0.00 | 14.00 | 3.94 | 107.92 | 0.66 | -0.93 |
| AII | 5.51 | 5.00 | 0.55 | 0.00 | 16.00 | 3.90 | 70.84 | 0.39 | -0.70 |
| CI | 5.88 | 6.00 | 0.59 | 0.00 | 16.00 | 2.77 | 47.20 | 0.74 | 1.11 |
| CII | 8.26 | 8.00 | 0.83 | 1.00 | 19.00 | 3.89 | 47.12 | 0.21 | -0.45 |
| GII | 6.70 | 5.00 | 0.67 | 0.00 | 18.00 | 4.12 | 61.60 | 0.53 | -0.63 |
| SPP | 5.60 | 5.65 | 0.20 | 2.37 | 9.13 | 1.89 | 33.84 | 0.03 | -1.52 |

**Table 4. Descriptive statistics of CPS and SPP and its sub-scales**

The highest mean concerns individualism hierarchical-egalitarian KIRHIH (m=46.94, rank r=0.75, Vm=25.09), and its skewness equal to -0.41 indicates the domination of results above the mean. Next place takes egalitarian individualism KIRHIR (m=43.99, rank r=0.70, Vm=17.36, skewness -0.66), and collectivism hierarchical and egalitarian individualism KIRHKH (m=42.31, rank r=0.60, Vm=18.17, skewness -0.01). On the last place is collectivist egalitarian - individualism egalitarian KIRHKR (m=41.90, r=0.54, Vm=38.92, skewness 0.18).

The lower level of the SPP indicates the style of AI (authoritarian). Maximal value of SPP is 30, so the mean equal to m=5.60 and rank r=0.20 indicate low level of SPP and domination of two authoritarian style AII (m=5.51, rank 0.55, Vm=70.84) and AI (mean m=3.65, rank 0.37, Vm=107,92). However those two variable are very differentiated – their coefficients of variation of average indicate very high heterogeneity.

We can observe also appearance of a purely consultative style CII (m=8.26, ran r=0.83, Vm=47.12), with the highest mean of SPP dimension, and total participatory style GII (Bang, democratic) with the mean m=6.70, rank r=0.67, and variation Vm=61.60. Nearly consultation (CI) is also observed with the mean m=5.88, rank r=0.59, Vm=47.20. Thus, the styles are

differentiated and there are two opposite tendencies – authoritarian (Ai, AII) styles and a purely consultative (CII) styles. However dominate authoritarian styles.

**The effect of psycho-social determinants CPS on SPP**

To find answers to the research questions and verify the second hypothesis H2, the authors analyzed strength and significance of Pearson's linear correlation coefficients r, CFA results and SEM results (Table 5, Table 6, Figure 2). The results are presented in Table 5-6. Correlation coefficients indicated positive and strong association between dimensions of CPS and SPP (r=1, p<0,05). The variable KIRHIH correlates positively with the variables AI (r-0.52) and AII (r=0.45). From the other side ). The variable KIRHKR correlates negatively with the variables AI (r—0.61) and AII (r=-0.64). Thus, social factors - selected psychosocial determinants as collectivism and individualism (CPS) affect decision-making participation (SPP) in the process of the Polish Army units command and control. Thus, main hypothesis H1 seems to be supported.

Especially interesting were strong positive correlations between SPP and CII (r=0.79), and SPP and GII (r=0.85). The variable KIRHHR correlates positively with CII (r=0.58), and with GII (r=0.66). Thus managers in Polish Army characterized by collectivism will be an equivalence evinced a greater willingness to choose leadership styles of participatory (CII GII). Thus hypothesis H1.1 seems to be supported.

Negative correlations concerned SPP and AI (r=-0.84), as also SPP and AII (r=-0.86). KIRHIH correlates negatively with CII (r=-0.40) and GII (r=-0.48). Thus managers characterized by collectivism hierarchical be evinced a greater willingness to authoritarian behavior (AI, AII). Thus hypothesis H1.2 seems to be supported.

KIRHIH correlated positively with the variables AI (r=0.52) and AII (r=0.45) and negatively with SPP (r=-0.56). Thus, managers characterized by an equivalence of both individualism and hierarchy will be evinced a greater willingness to choose styles authoritarian (AI, AII). Thus hypothesis H1.3 seems to be supported.

Regression models, model SEM and CFA confirmed also the influence of CSP on SPP (Table 5, Table 6, Figure 2).

### The Global View of Results – SEM

In order to test research hypotheses according to the model depicted on Fig. 1 - we conducted series of analyses using SEM with good results (Table 5, Bagozzi, 2012, Kowal and Keplinger, 2015, Kowal and Gurba, 2016, Romanowska et al., 2016). The empirical model is based on the conceptual one according to theory and series earlier detailed analyses. The current SEM comprises two parts: 1) the measurement model which relates measured observable variables (within rectangles: for example KR, IH, SAI,SAII, SCI, SCII,SGII) to latent variables (in ellipses: SPP, AI, AII, CI, CII, GII, CPS); 2) the structural model that relates latent variables to one another (CPS -->SPP, SPP --> AI, AII, CI, CII, GII). Variables d1, …,d13 (within circles) are residuals. The results from Tables 4-5 with empirical correlations and the SEM analysis confirmed the influence of the CPS on SPP and especially KR on SPP (Table 5, Table 6). So, the hypothesis H2 seem to be supported.

| Tab. 6 Model fit in SEM - indicators for model and scales | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| Construct for validation: | AVE | Cronbach's α | Mean Corr. Between Items | $\chi^2$ | df | $\chi^2/df$ | RMSEA | p | GFI | AGFI |
| Model globalny | 0.2 | 0.8 | 0.1 | 63.178 | 20 | 3.16 | <0.1 | <0.01 | 0.9 | 0.83 |
| KIRH | 0.51 | 0.82 | 0.12 | 911.69 | 702 | 1.30 | 0.042 | <0.01 | 0.72 | 0.69 |
| KIRHIR | 0.32 | 0.72 | 0.23 | 86.98 | 27 | 3.22 | 0.12 | <0.01 | 0.88 | 0.81 |
| KIRHKR | 0.68 | 0.95 | 0.65 | 104.38 | 44 | 2.37 | 0.09 | <0.01 | 0.9 | 0.83 |
| KIRHKH | 0.27 | 0.69 | 0.18 | 76.94 | 35 | 2.20 | 0.085 | <0.01 | 0.91 | 0.86 |
| KIRHIH | 0.63 | 0.93 | 0.59 | 52.07 | 27 | 1.93 | 0.075 | <0.003 | 0.93 | 0.89 |
| SPP | 0.41 | 0.91 | 0.27 | 514 | 405 | 1.27 | 0.04 | <0.001 | 0.8 | 0.76 |
| AI | 0.18 | 0.8 | 0.12 | 669.87 | 405 | 1.65 | 0.063 | <0.01 | 0.73 | 0.7 |
| AII | 0.13 | 0.7 | 0.08 | 504.3 | 405 | 1.25 | 0.038 | <0.01 | 0.8 | 0.8 |
| CI | 0.08 | 0.4 | 0.03 | 481.75 | 405 | 1.19 | 0.034 | <0.005 | 0.81 | 0.8 |
| CII | 0.17 | 0.7 | 0.06 | 498.66 | 405 | 1.23 | 0.037 | <0.001 | 0.8 | 0.77 |
| GII | 0.14 | 0.76 | 0.1 | 511.1 | 405 | 1.26 | 0.04 | <0.001 | 0.8 | 0.77 |
| AVE - average variance extracted. α – Cronbach's α. r – mean correlation between items. p – observed probability. $\chi^2/df$ . RMSEA. GFI. AGFI - indicators of model fit Source: own materials | | | | | | | | | | |

| Table 5a. Pearson's Correlation Coefficients r, Between Subscales Of CPS And SPP | | |
| --- | --- | --- |
| | KIRHKR | KIRHIH |
| AI | -0.61 | 0.52 |
| AII | -0.64 | 0.45 |
| CII | 0.58 | -0.40 |
| GII | 0.66 | -0.48 |
| SPP | 0.75 | -0.56 |

| Table. 5b. Model variables considered in CFA and SEM | | |
| --- | --- | --- |
| **Dependencies between variables of SEM** | *λ* | r |
| (SPP)-1->[SPP] | 1.00 | 1.00 |
| (CPS)-4->[KIRHIR] | -0.03 | -0.53 |
| (CPS)-5->[KIRHKR] | 0.74 | -0.43 |
| (CPS)-6->[KIRHKH] | 0.02 | -0.5 |
| (CPS)-7->[KIRHIH] | -0.57 | -0.21 |
| (CPS)-17-(SPP) | 1.00 | 1.00 |
| (SPP)-4->[AI] | -0.33 | -0.84 |
| (SPP)-5->[AII] | -0.27 | -0.86 |
| (SPP)-6->[CI] | -0.08 | 0.03 |
| (SPP)-7->[CII] | 0.21 | 0.79 |
| (SPP)-7->[GII] | 0.34 | 0.85 |
| r-Pearson's correlation coefficient. λ- factor loading (see Romanowska et al., 2016. 2008) | | |

Source: own materials



**Figure 2. Empirical model**

Ziobrowska, Kowal, Senejko
Psychosocial factors affecting decision-making participation
among MIS users. Preliminary exploratory study in Polish army
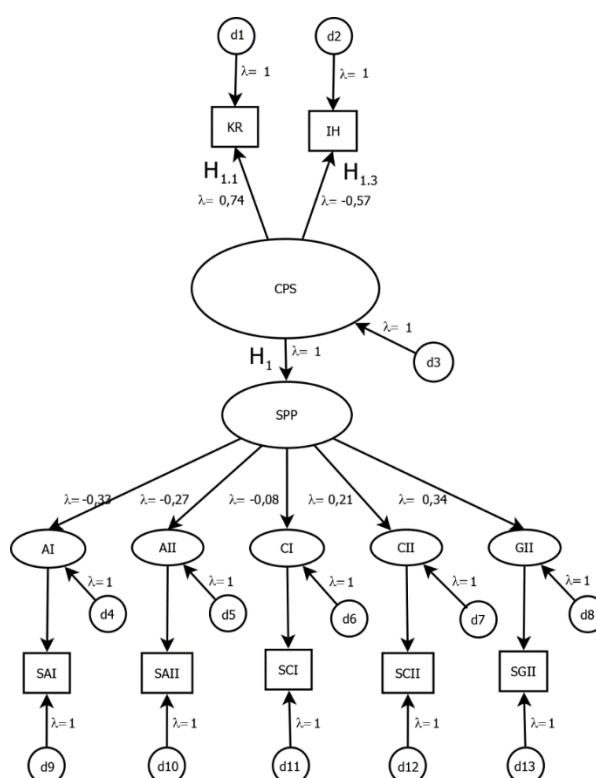
## CONCLUSIONS, DISCUSSION, CONTRIBUTION AND FUTURE RESEARCH

The most important research questions concerned the impact of collectivism and individualism (both egalitarian and hierarchical), on military managers' readiness to conduct participatory decision-making processes.

The most important finding of current study indicated that collectivism and individualism (egalitarian and hierarchical) affected the level of decision-making participation of SPP. Managers with a high level of individualism hierarchical require less participatory decision-making process, probably due to the need for their uniqueness associated with the competition.

While managers with a high level of collectivism egalitarian prefer to engage subordinates in the decision-making process according to common goals and mutual dependence with others.

People with high collectivism an equivalence particular importance attribute group goals and mutual dependence. Members of the group do not impose a significant limitation of their freedom, give up their own goals and aspirations but rather put the requirement of reaching individual goals within the community. They value security, social justice and universal values. They respect tradition (Adamska, Retowski, Konarski, 2005).

Considering the fact that the military is an organization that shapes the soldiers sometimes from the age of 15, if anyone started his high school education in the military, the behavior of a collective are a natural consequence of the mode of education and the nature of work. Soldiers learn to stay in the barracks, where in addition to joint exercises and tasks strictly military, eat meals together, using common halls and perform the duties and organizational - cleaning. An important element of the training of future soldiers is to inculcate respect for tradition, uniform, and national symbols. After graduating officers they are officially promoted and cater to different units, which carry out their work in uniform, working with the teams, while pursuing their own aspirations climbing the path of advancement office. High impact variable collectivism equivalence propensity to participatory decision-making, due to the way of shaping a candidate for the soldier, and then a further operation of the operating conditions of a collective. Despite the fact that the order is the primary form of communication in organizations, the military, the modern officers who increasingly move in the virtual world and the automated processing of information, recognize the value of the expertise and experience of their colleagues, also available through modern means of communication, which affects their tendency to participatory decision.

People with high individualism hierarchical realize the need for uniqueness and achieve a high social position through competition, and differentiate themselves from others regardless of their place in the social hierarchy (Triandis, 1995), tend to "victory above all" (Hwang, 2003). They value the strength, power and joy of life.

From current research individualism hierarchical affects a greater willingness to authoritarian behavior. Decisions armies are often made under pressure of time, in conditions of risk or uncertainty and stress. Therefore, control officer may not have the time to consult with subordinates and must rely only on themselves, on their knowledge and experience and the content available through advanced information technologies. Another reason for the low participation in decision-making may be the fact that, especially young officers at the beginning of his career focus on ambitious pursue their own goals and the pursuit of power. In this case, commanding the other gives a sense of power, and the nature of the work makes it possible to achieve fulfillment through competition.

The proposed project presents original approach conditions of participation decision. Although this construct was repeatedly examined by the representatives of many disciplines, verifying the influence of organizational factors, demographic and cultural - has not conducted research on the effects of purely personality factors such as the size of the hierarchical and egalitarian collectivism and individualism propensity to participatory decision-making among managers. Another value of the project research is to verify the impact of these characteristics on participation decisions of managers working in an organization like the military which is the Polish Army, which has not subject to an examination.

The conclusions of the research will develop methods to support the development of leadership skills, selection and selection of personnel, and have a chance to become the beginning of the development of predicting the conditions necessary to promote a participatory style of decision-making among managers of different levels of management, which may result in a greater impact employees taken in the organizations decisions and better fit benefits to their expectations. Increased as a result of employee participation information flow, and hence the level of understanding by employees of processes reduces ambiguity and conflict role, helping to increase job satisfaction (Scott - Ladd and Marshall, 2004, 2006), thereby improving the work of managers and encouraging the formation modern organizations. Moreover, it seems that there is a possibility of introducing new elements to existing models of participatory

decision-making by taking into account variables that determine its level, collectivism and individualism on the hierarchical level and an equivalence.

The results of our preliminary study expand existing knowledge and research stream on participatory decision-making process in modern military army in transition countries. The conclusions can be applied by educators and military MIS managers to improve and enhance the operational efficiency of the army, as well as to improve the image of the Polish army. The results, due to the fact that interest in the participatory decision of many scientific disciplines, may be of interest to psychologists, sociologists, cultural theorists and economists in management.

Our analyses presented in this article have some limitations that can be considered in future studies. First, MIS users were only surveyed in the Polish Army. Perhaps our findings could possibly be generalized to other similar transition countries. It is quite possible that styles of management change over time. Apart from that, the current analysis did not perform other control variables such as age, organizational factors or gender, and type of unit. It is also probable that the adaptation and translation prepared a lot of years ago (1996) to some extent influenced the results.

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# Keynote address

# Symbols of modernity: dream analysis

by

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**STATE OF THE ART AND PURPOSE**

Dreamwork is one of the most important methods used in Jungian analysis. Dreams are representations of psychic reality and reflect collective trends of the contemporary Zeitgeist. The symbol, in all its complexity and capacity for generating new meanings, is perhaps the most adequate expression of the direction of this changing world. It is essentially something universal – changeable in its changelessness.

In analysis, dreams are portals of meanings. They actually constitute a sort of network similar in its nature to the Internet. In individual analysis, they establish association pathways that break the laws of time and space. At the collective level, motifs appear and disappear, shaping our reality anew. They can expose hot spots and challenges, anxieties and brand new, emerging trends.

In my presentation, I would like to focus on contemporary symbols that have made inroads into dreams due to the ever increasing pace of our civilization. The plane, car, mobile phone, computer, glass skyscrapers, elevators, the world wide web, etc. are becoming regular features of dream reality. Computer games keep changing the structure of dreams, which become suffused with meaning due to constant information input from the Web. I would like to present the phenomenology of dream reality, based on the interpretation of dreams shared by my patients and also those sent in by other, anonymous persons. Drawing from such material, one can distinguish collective trends and lay the foundation for new meanings and their impact on the development of both individual and community.


**RESEARCH/PRACTICAL IMPLICATIONS**

According to Jung's theory, dreams have a compensatory nature – they compensate the one-sidedness of our conscious attitude. Dreams can be a source of our innovative and creative capacities, but they can also signal the dangers and pitfalls of rapid technological development

and globalization. They are a reflection of modern myths. Access to the unconscious provides the possibility of identifying what is new, assimilating it and integrating with the existing structures.

The theoretical structure of this presentation is based on the works of C.G. Jung, J. Hillman, J. Cambray, T. Singer, S. Kimbles, M. Jacoby, and D. Kalsched.

**Keywords**: symbols of modernity, dream analysis, Jung, psychoanalysis

# Virtual reality in psychological treatment and psychotherapy

by

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## ABSTRACT

Virtual reality is a reality created by using information technology. It may include elements of both the real world and an entirely fictional one. Nowadays, in the sphere of psychological and psychotherapeutic activities, both realities (virtual and real) tend to fuse, providing new opportunities for human contact, interaction and exchange of thoughts, feelings, and behaviors. The aim of this article is to review reports on the application of computer technology and its usefulness in psychological and psychotherapeutical practice, as well as to indicate the benefits and difficulties connected with the application of the Internet in these fields. The other purpose is to demonstrate whether and in what way the following aspects of psychotherapy practice are affected by the Internet medium: establishing a therapeutic relationship, creating so-called "shared space," or the occurrence of the transference and countertransference phenomenon. It is also important to observe any new phenomena that are unique for online therapy, as well as the implications of online psychological and psychotherapeutical help for the long-term development of the individual. Relying both on existing sources and my own experience, I can acknowledge that making use of the Internet, including applications such as Skype, is an effective means of providing psychological assistance and conducting psychotherapy – as effective as traditional therapies. The aforementioned typical effects of the classical approaches can also be observed in online treatment. One limitation of online therapy has to do with issues of safety and confidentiality of information obtained from clients. Therefore, when Internet devices are being considered for online therapy, one should use applications and platforms that ensure security guaranteed, for instance, by the contracts signed between ISPs and legal entities, including therapists and clients. Whereas in developed countries these problems have already been regulated by law, in developing economies they are still primarily negotiated between the therapist and the client. At the moment, the actual problem is not whether to use online therapy or not, but how to ensure the confidentiality of exchanged information. This is a task and challenge for the new

information technologies, internet service providers, and lawyers, especially in developing countries.

# Discussion Panel:

## Analytical psychology and psychotherapy in era of new technology

Session Co-Chairs:

**Krystyna Węgłowska-Rzepa**, University of Wrocław, PTPA, Poland

**Aleksandra Szczepaniak**, PTPA

**Joanna Kasha**, Jagiellonian University, PTPA

**Mateusz Kolaszkiewicz**, PTPA

Lewandowska
The film story about the human community as a picture of the integration process
of polymorphic psyche. Implications for psychotherapy

# The film story about the human community as a picture of the integration process of polymorphic psyche. Implications for psychotherapy

by

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## INTRODUCTION

In modern psychology, the idea of the psyche of non-uniform, which is the system of relatively autonomous centers, for the first time has been outlined by Pierre Janet, and later developed based on research and clinical practice by Carl Gustav Jung. In Jungian psychology complexes play a special role: "small, autonomous personality" (Jung, 2007, p. 91), constellations of mental contents, charged with specific emotional values, hiding in the area of the unconscious. Complexes affect our emotions, physiology, thinking, or behavior and we are not aware of them, mainly due to the fact that in Western culture, we strive to see ourselves as a single, coherent and self-conscious entity, positive and compliant with the requirements of society which are being posed to us. Insight into the part of the psyche different from that understood the "I" may also be impossible or difficult because of the related traumatic experiences. In the writings of Jung, the concept of the complex also became subject of evolution and clarification. In the later works, he draws attention to the functioning of the complexes' core archetypal pattern. The archetypal nature of complexes means among other things, that they are not only imperfect splashes of psyche, created by the mechanisms of defense against trauma, but they are immanent aspects of self, endowed with its own development opportunities and adaptation. "The very epitome of complexes, as such, does not have to be a pathological phenomenon. For example, in our dreams complexes often they manifest themselves in a personified form. Through training we may even become able to hear and see our complexes while we are awake"(Jung, ibid)

It is worth noting that even our conscious I (ego) is considered here as one of the complexes, with an outstanding central position in the area of the psyche ("It is of course, our favorite complex and the one which we hold the closest. This complex is constantly at the center

of our attention and our wishes - is the absolutely essential center of our consciousness. "(Jung, 2007, p. 26))

Being therefore a unique person, each of us is also a community of sub-persons - internal form, alienated or staying together in a more or less lively dialogue, silent or to some extent granted a voice, operating outside our consciousness or partially unconscious and recognized by the I. The process of becoming aware of the "other voices" in the area of our psyche, trying to understand their nature, undertake dialogue with the conscious I, is a key aspect of personal development in analytical psychology.

The idea of polymorphic psyche appears in psychology in many different versions: from the Freudian model of tripartite psyche, through Assagioli's model of subpersonalities (Assagioli, 1975), the concept of states of I developed by Eric Berne (Berne, 1961), to the theory of the "polyphonic box and I" by Hubert Hermans (Hermans, 1992) and the concept of "internal team" by Frederic Schulz von Thun (Schulz on Thun, 2007). As Rowan and Cooper wrote, the recognition of our Self as "genuinely pluralistic" differs both from the concept of supporting the illusion of a monolithic, unchanging entity, as well as the approaches that see the "fragmentation of I" only a symptom of pathology. It is based on the assumption that "an individual can be thought of as a multiplicity of qualitatively different "I', and at the same time as one I: an interpenetrating, dialogic constellation of subsystems" (Rowan, Cooper, 2008, p. 12). This approach is gaining also in supporting research on the functioning of the human nervous system, especially the brain (Lancaster, 2008).

## WORKING WITH THE "INNER TEAM" IN PSYCHOTHERAPY

In modern psychotherapy are many different approaches to work with the psyche, treated as an internal system of subpersonalities. The common assumptions are: perception of psyche as a community of autonomous parts, largely corresponding to the Jungian complexes, the emphasis on a dialogue with these internal figures - showing them acceptance, granting them a voice, empathic listening and recognition of their dominant feelings, identifying their needs and often easing antagonisms between them. An important assumption is also the existence of analogies and similarities between the functioning of the individual in real, external communities, and the dynamics of the individual's "internal team." An example of this modern approach, consistent with Jungian psychology, although developed within the systematic approach, is the model of the System of Inner Family (Schwartz, 2008; Schwartz, 2013). This

approach has been developed in the course of clinical work, based on observation of psychotherapy customers who often describe their problems by referring to the existence of internal figures. The aim of therapy is to teach the patient empathic listening and how to direct these figures, as well as heal the relationships between them, and as a result heal the whole system. The figures are at the same time perceived is not as one-dimensional emotional diagrams, or states of mind (the "sad," "angry" or "critical" part), but as a real small sub-personalities possessing the whole range of feelings or convictions and defined only because they play defined roles in the system. Often they turn out to be of a certain age, temperament and even gender. The therapy uses, among others, the working methods drawn from systemic family therapy. This is reflected in the emphasis on the study of the relationship between the different parts, their coalitions and polarization, underlining the importance of borders and direct communication and verifying what roles they play in the system. Therapeutic intervention can be based on facilitating expression and communication of individual parts, but also on supporting the process of their release from the rigid roles undertaken in response to a traumatic experience or other external circumstances. The therapist also strives to recognize and bring out the part of the person who acts as the inner healer – it initiates the process of empathic control in the entire system and organizes it. It is compared to a "competent co-therapist, who lives within the client" (Schwartz, 2008). This aspect of personality, referred to as "I", is the part which possesses leadership characteristics, such as "a broad perspective, trust, compassion and acceptance" (ibid). It is located in every psyche, but a person with severe deficits or behavioral disorders may have little access to it. Its leading function does not mean conducting supervision or censorship, but rather uniting and supporting the individual parts. Subjectively it is perceived as an ability to observe the emotions which the client undergoes, a state of acceptance, curiosity and openness.

## THE STORY ABOUT THE FATE OF THE COMMUNITY AS A REFLECTION OF A POLYMORPHIC PSYCHE

The polymorphic structure of our psyche and the dynamics of its integration process, can be recognized through encounters with symbolic images and narratives contained in the culture, especially in works of art. The complexity of the psyche, symbolized especially in such performances which include an image of the human community, family or group inhabiting a common space, taking up a common journey or engaged in a meaningful and creative activity. The literary story or film can be handing in mirror to our soul, in which it will be able to view

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and recognize itself. These will be stories about merging of the community, the raising of voice of all its participants, undertaking a dialogue between differing or even antagonistic characters. Such stories can be found in mythology and traditional tales of all cultures, as well as in contemporary literature, theater, film. Today, when an insight into the complexity of the psyche is on average much weakened or suppressed, and the modernist illusion of a consistent "I" has been replaced only by postmodern fantasies about the "death of the subject", such stories seem to be particularly needed, they also raise a strong emotional response in the recipient. An example of such a moving story is the "Lord of the Rings", describing the adventures of the "team of the Ring", who travel together not only physically through consecutive locations, but also throughout the development of the community - from mutual alienation, a certain mistrust and stereotyping each other, to getting to know each of the participants of the exhibition, and also disclosing their specific personality and giving them the corresponding roles and responsibilities, thus including in the joint effort the most alienated, sick or destructive individuals.

A particular value in terms of supporting the customer's self-understanding and the process of therapy can also be seen in the patterns of good leadership present in such stories. They can symbolically represent the activity of the internal conductor – the one occupying a central position in the "I", who is limited in scope acts as helmsman "of the boat filled in with spirits," which is our psyche, in its cruising through life.

## THE HEALTHY "I" IN THE INNER THEATER

The Polish TV series "Artists" - a story in episodes, made by Monika Strzępka and Paul Demirski - takes place in the theater. The new director, who takes up the position in a crisis situation, is confronted with a team of artists mistrustful, conflicting, unsure of the coming tomorrow. But theater is not just actors - other dramatis personae are an old, experienced porter, knowing the written and unwritten rules of functioning of the place, the cleaning lady, who speaks with the spirits of great directors and becomes their spokesperson to the less sensitized members of the band, the buffet lady, who refuses to give coffee to those who break the rules of the community, or the 'technical' employees, observing and supporting the work of the spectacle. All those who work in the theater have a share of knowledge about what is happening in it, a role to play in the preparation of performances, some of the characters turn out to be a more significant than they seem in the beginning. For example, the stage manager is here an

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actress haunted by fear, who has withdrawn herself from acting but in favorable conditions decides to return to the game. This is similar to the transformation of sub-personalities, which as a result of traumatic experiences inhibits or blocks certain behavior or activity unit, yet if taken care of in the course of therapy, it reduces resistance and often performs a valuable potential.

The film story, containing multiple allusions to the current Polish reality and the reality of the functioning of the theater, is also a timeless story about the "backstage of the theater", the theater's life hidden behind the curtain. It is also, as intended by its authors, a story about the theater as a group of people "who are fighting for the common good", about "the situation of people from different social classes who live the same place and have to get along with each other" (Strzępka, Demirski, Gruszczyński, 2016). It is therefore one of the stories that can be read as a symbolic picture of the deep, polymorphic structure of our psyche and its integration process.

The story of a theater troupe in the face of the crisis is gaining particular therapeutic value not only through content, but further due to the structure and dynamics of the presented world, which seems to illustrate well the structure and dynamics of polymorphic psyche - aimed at the internal chaos and alienation of its parts, through their gradual integration to mutual understanding. The story, telling about a dramatic few months in the life of the Warsaw theater, can illustrate the functioning of personality - the diversity and autonomy of its complexes and also the development of the internal dialogue, transformation and integration. What's more, if you consider the "artists" mentioned in the title as personifications of complexes, a metaphor emphasizes an important aspect of their nature. Complexes are not stunted fragments of psyche - they are our "inner artists", capable of deep experiencing of reality in a specific way, and in this sense, enriching our inner life, in their own way being able to see our fate and live our life's adventures. As long as they remain in an unhealthy system of mutual provocations and coalitions, either suppressed or ignored, they cannot fully disclose their nature. However, in a healthy functioning self, which makes sensible decisions and accomplishes creative tasks in the outside world, while at the same time treats the inhabitants of its internal space with respect and empathy – the complexes are able to speak, provide a deeper understanding of reality saturated with important meanings, they can also change and play new, more adaptive roles. The complexes are also as autonomous as the sensitive to freedom artists are. They cannot be instrumentally "used", forced to play their appropriate role - they must themselves find

themselves in these roles, but also connect their work with others in creating a whole that goes beyond what is expected, resulting in transcendence.

The character of the director in this story has many important features of a healthy functioning "I": he holds the helm of the theater, but deeply respects the sensitivity and uniqueness of the artists. He is focused on tailoring the tasks to the aspirations and capabilities of the team, but also sensitive to internal processes. He treats its employees with respect and compassion for the strong emotions which they experience, their absentmindedness and moments of weakness. That is the way in which you could imagine a healthy "I", that manages, controls, but continues doing it for the good of the whole, in the name of creative and meaningful activities, for which it attempts to provide conducive conditions in the outside world. Furthermore, it is also presented as heroic – not turning away from responsibility, showing perseverance in seeking the good of the whole, constantly responding to challenges and adversities. It is able to reach the parts which feel misunderstood, wounded, rebel, react with aggression or by trying to take control. Ego recognizes these parts, learns them, listening to their stories, opening to their arguments. It happens that it makes mistakes, afraid of the "other" and burdens it with guilt, perceiving as a threat. But since it is closely watching, it patiently corrects errors and better understands both the nature of the individual characters and the dynamics of the whole team.

In modern psychology "I" is considered to be a construct that at the neurophysiological level is formed as the integration of bodily sensation and emotional one, and at the level of conscious image, is constructed on the basis of patterns and cultural narratives. Pictured here pattern of leading a team by empathic, vulnerable and deeply suffering characters can be a highly adaptive pattern of functioning in a system of the polymorphic psyche.

## CONCLUSION: INTRA-PSYCHOLOGICAL DIALOGUE AND INTERACTIONS IN THE OUTSIDE WORLD

In this analysis, however, it is not the least of it, to prepare the cited out of its specific content and treated only as a symbolic material supporting therapy or self-development. However, there is still an analogy between how we live in real communities in the surrounding world, as we undertake a dialogue with others, and we are ready to meet them and of how we relate to our community, to the tearing, internal conflicts and the multiplicity of other voices. The series "Artists" addresses important issues present in current, real communities in which

we live. These problems significantly affect the level of our anxiety, internal confusion or even internal shattering. As it draws attention to Mary Watkins, "in the most private dialogues with our dreams and fantasies in the most intimate moments of conversation with ourselves, we metabolise culture, economics and politics. In the structure of the distribution of power between us and the other inner voices, we find gifts of democratic form, imbalance resulting from attitudes such as racism and sexism, fighting between vocal monotheism and the polyphony of the former polytheism and the heroic efforts of the ego to maintain control."(Watkins, 2008 p. 258). Deepening th understanding of their world through the unit, it simultaneously conducting patient dialogue with people from the outside world and the recognition and understanding of the "voices" present in the inner world. It is therefore particularly important to support the process of self-understanding and integration of mental balance through the literary and cinematic narratives that tell about the current processes in the culture and society in which we live, and at the same time contain universal appeal, concerning the important aspects of our inner life. As we wrote Jung: "The current times show with embarrassing clarity how little people are able to count with the arguments of the other person, but this ability is a fundamental and essential condition of every human community. Anyone who intends to come to terms with each other, must heed this basic problem. For in the degree in which it does not recognize the other person, he refuses the right to exist, "another" in itself - and vice versa. The ability to internal dialogue is the touchstone of external objectivity. " (For Watkins, ibid, p. 260).

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# How Gender and spiritual sensitivity in a IT users workplace. An experimental study in Poland.

by

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**ABSTRACT**

The article concerns the relationship between the spiritual sensitivity and its components (Holism and Harmony, Wisdom, Consciousness, Meaning, Religiosity and Faith, Ethics and Moral Sensitivity / Conscience, Openness to the Other; Spiritual Commitment; Aesthetic Sensitivity) and gender of IT users The tests were carried out with the use of the methods of random interpersonal network and sequence sampling with the passive optimal experiment, in the district of Lower Silesia. The results indicate that IT users in Poland have high enough level of Spiritual Sensitivity, and gender differentiates SSI in fact in all spheres. The issue of suitability and application capabilities / skills spirit in the area of organization management and business become in recent years more and more popular. In this paper we present the concept of spiritual sensitivity. We explain spiritual sensitivity as disposition to experience spirituality, manifested in the recognition of events in the perspective of the transcendent and the final, the moral sense and the ability to finding meaning in situations paradoxical and border. It is a collection of related skills and abilities, and of direct relevance / apply to everyday life, serving adaptive solving problems and accomplishing goals, especially in the field of moral, which is necessary for the full development in adulthood), assumptions about its relationship to gender, describe the test procedure, and created an original method for measuring spiritual sensitivity (Inventory sensitivity spiritual - SSI).

**Keywords:** spiritual intuition and its components, Spiritual Sensitivity Inventory, IT industry.

## 1. INTRODUCTION

The term that appears frequently in scientific publications and in the mass media, serving concise, multi - contextual description of the current entourage of life and development of individuals and societies is globalization (Giddens, 1990; Fukuyama, 1992; Bauman, 1999,

2000; Friedman, 2001; Szendrik, 2004; Beck, 2006; Rybinski, 2007; Elliott, 2011). Research and current observations show that, the development of technology (information, communication), trade, international business introduces the need of changes in the macro system (economic, social, cultural) and micro system - (personal, professional, social) life of individuals. This intertwining of micro- and macro-level is particularly clear in the corporate world. Faced with contemporary challenges, corporate organizations do not stop to search for new resources for increasing the efficiency, productivity, innovation and constitute a source of internal motivation and personal development of leaders and employees.

An interesting proposition in this context seems to be the spiritual resources. M. Weber in historical publication "The Protestant Ethic and the Spirit of Capitalism," drew attention to the role of cultivation and management with certain aspects of spirituality in the professional area and to positive effects on the development of employer and enterprise that such an attitude brings. Building the ethos and culture of organization based on the values, the way of career perceived in terms of life vocation, professional goals and tasks seen as the source of meaning in life, commitment to work treated as a virtue and as the path of personal development, reasonable approach to the management of capital, which is not merely selfishly hoarded and consumed, but should serve the general, greater good, behaviors which facilitate trust and cooperation in economic relations, such as: the proceedings in conscience, diligence, honesty, fairness in commercial transactions, empathetic and subjective approach to the cooperators, treating them by the leader with care and responsibility, leadership perceived as a service, building and giving attention to the master - student relationship and referring to the postulated (even by Erikson) generativity and wisdom – these are the issues that lie at the crossroads of management psychology, developmental psychology, personality psychology and psychology of spirituality.

The reflection about spirituality in companies and business is particularly important in the era of globalization, in which the existential and identity issues calls for special attention and care, and many organizations, despite increasingly better technical capabilities, communication, enabling the expansion of the market, are in crisis, because the economic systems are based more on maximizing profits, not on the deeper relationships and higher goals or values. These problems are becoming more severe and urgent - both at the individual level – of leader or employee, as well as the entire organization. Not surprisingly, the amount of research and publications about the use of elements of spirituality in the organization is recently growing fast (Benefiel, 2005; Dent, Higgins Wharf, 2005; Fry, 2003; Grace 1999; Houston and

Sokolow 2006; Miller 2000 ; Mitroff and Denton 1999; Giacalone and Markiewicz 2003; Reave, 2005). And since 2002, even the special journal devoted strictly to the problem - Journal of Spirituality, Leadership and Management - has been issued.

## 2. THEORETICAL BACKGROUND

**The phenomenon which the authors are interested in is spiritual sensitivity**. Through its prism, in the context of gender, we look at the functioning of IT workers in the organization environment. It is *a disposition to experience spirituality, manifested in the embracement of nature of things in transcendent and final perspective, in the moral sensitivity and the ability to find meaning in paradoxical and limit situations. It is a collection of related specific abilities (Holism and Harmony; Wisdom, Awarness, Meaning; Religiosity and Faith; Moral Ethical Sensitivity/Conscience; Openness to Other People; Spiritual Commitment; Aesthetic Sensitivity), with a direct reference in everyday life, used in adaptive problem solving and implementation of purposes (especially in the moral field), which is necessary for the full development in adulthood.*

At late 90s and beginning of year 2000 - many authors started to point to a previously unexplored wealth of possibilities in the use of elements of spirituality in the organization and in business. Vailla, quoted by Duchon and Plowman (2005) showed that the introduction of elements of spirituality in the area of organization and management is the urgent need, but it is also harder than ever. At the beginning of development of corporations, employees have a natural ease of finding the basis of identity and meaning of life at safe work environment, rich in social benefits and were inspired by the charismatic character of companies leaders who had status and authority of the master. However, according to Fry (2003) - an organization that ignores the need of implementation the spiritual skills in daily functioning and ethos cannot be the learning organization, which develops and shapes the intrinsic motivation of the employee. Animasahun (2008) referring to the concept of spiritual intelligence by Zohar and Marshall (2000) and Wiggleworth (2002), on the basis of studies conducted among employees of the National Union of Road Transport in Nigeria, showed that in addition to the traditional training to raise the level of emotional intelligence or training of creativity, raising spiritual skills is an effective means of building consistent, interacting, ie. set on a common goal, effectively coping with conflicts community organization. Mitroff and Denton (1999) went further, claiming that implementation of various classical training programs and techniques to streamline and

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integrate environmental organization it is not enough, but it is essential to analyze, understand, apply a program to develop spiritual capacity, and treat the organizations as a spirituals entities. Middlebrooks and Noghiu (2010) examining the phenomenon of spiritual intelligence, saw it as a capital resource beneficial to the organization. At the individual level, they define it as a disposition to serve the group, the community, which is the kind of motivation for personal growth, including vocational development, and at the organizational level - as a system of norms and culture. Korcz (2006) draws attention to the "relevance" spiritual intelligence for professional development and on issues related to human personnel management. The high level of spiritual intelligence conducive to such qualities as creativity, spontaneity, efficiency, effective coping in uncertain and vague conditions, and also in conflict situation, or extreme stress. In contrast, a low level of spiritual intelligence leads to negative phenomena such as: apathy, lack of emotional balance, a sense of helplessness and hopelessness, and for a variety of pathologies of meaning. China and Tong (2011) in emotional intelligence and spiritual intelligence see an antidote for labile, changeable, vague, favoring anonymity and alienation working conditions in corporations and organizations characteristic for the era of globalization. They treat them as a source of energy and motivation for work, and as a expertise system, improve daily functioning in the work environment and raising well-being. Fard, Viseh and Shakary (2011) proved that spirituality applied in an organization makes it more humane and saturated empathy, also – it helps to raise personal satisfaction and creativity of employees, order of organization, or even increasing the level of long-term commercial success of the company.

Much attention in the theory and practice is devoted to a question of the application and learning the spiritual competences by the leader. Katz (2006) coined the term spiritual leadership. Spiritual leader should not discredit the tools, techniques and knowledge of the traditional management, but should expand it and give new meaning to higher. He use the spiritual intelligence (the awareness of the spiritual resources) to reach the target and make sense of action, respecting the values that are beneficial to their own development and the development of subordinates in the organization or community. Reave (2005) analyzed over a hundred studies that show a significant relationships between values and practices draw from spirituality and the effectiveness of leadership evaluated from the perspective of employees of the group and the leader. Fairholm (1996) and Smith (2006) pointed features of spiritual leadership: spiritual leader rejects the standard style of leadership based on values related to self (power, wealth and prestige); confesses transcendent values of integrity, freedom and

justice; He believes in human dignity and respect it; he focused on what is good for individuals, groups and societies; he helps build spiritual identity of employees and himself deepens own spiritual commitment (taking into account the value of co-workers); he creates connections between internal staff moral values and circumstances of the outside world, social and organizational. Kriger (1999), based on literature review has identified the following features of spirited leader: forgiveness; good; integrity; empathy; honesty and trust; patience; courage, inner strength; trust; humility; peacefulness; gratitude; service to others; soulful directing others; joy; spiritual balance; inner peace. The role of spiritual leader convinced also Shah (2009) in his research, mentioning, among others, such attributes as: having a vision; courage; wisdom; sense of purpose and vocation; creativity; enthusiasm and commitment; openness to others and kindness; awareness of the connections, relationships and sense of community; emotional intelligence; justice, as conditioning the effective functioning of the organization. Sidle (2007) writes about the five types of intelligence - including the spiritual - in the context of personal development and changes leading to gain the fullness of humanity in the service of own - self and others. Wingrove and Rock (1997) call it "the transformational leadership" and prove empirically the role of a holistic perspective, creating an ethos and vision of the organization, humility, reflection, self-awareness and life-long learning as the characteristics of the leader of the organization and social leader. Lynton and Thøgersen (2009) searching for the differences in the perception and definition of leadership in the culture of the East (China) and the west, promote the implementation of elements of Eastern spirituality in the world of business and social life. Brown (2003) shows the wealth of Judaic spirituality, finding its application in the organizational environment (refers to the Talmud, the Torah, the Bible and the teachings of Moses Pava - a professor of business ethics). Delbecq (1994, 2000) presents a program of staff training (engineers, managers working in the area of science and business, working in companies in area of communications, software, computers, technology, aviation, biotechnology), which helps to raise their awareness that the work, pursuing professional goals, can be seen as a kind of mission and vocation in life. She also claims that it prevents from negative phenomena such as burnout and lack of meaning in life. Bradbery (2011) proposes a new approach of learning and development within the organizational environment, respecting the spiritual aspects. It is a WISDOM model - acronym from the "holistic, interactive spiritual development of managers." Doostar, Chegini and Pourabassi (2012) investigating employees of hospitals and health services have proved the relationship between spiritual intelligence and its components (eg. Existential reflection, a sense of meaning, transcendental awareness), and behaviors serving performance and productivity of staff and the organization, which enhances

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the efficiency of the functioning of the organization. Van Hauen (2011) describes the original program of development of managers, who work in the field of medicine and senior care in Australia, stressing that it is the integral approach, emphasizing the spiritual aspects, such as openness to other people and their needs, empathy , self-awareness and understanding of leadership in relation to others, responsibility for others – co-workers and clients. Self-consciousness of leader assumes beliefs and attitudes based on values, sense of purpose and mission, which leads to the internal integrity and external integrity - to the working environment. Green, Duncan and Kodatt (2011) investigated the relationship between the level of spirituality of leader, and assessment of him made by co-workers, subordinates, supervisors. They used a Religious Orientation Scale, Spiritual Well-Being Scale and Daily Spiritual Experiences Scale. The higher the spiritual well-being and external religious orientation - the more the leader was evaluated as an active, willing to development and transformation. The higher level of daily spiritual experiences - the less stuff assessed him as the passive-avoidant leader.

**The second variable studied by the authors is gender**. There are studies showing that the intensity of involvement in spirituality and spiritual competence level (also - spiritual sensitivity) can be associated with gender in two ways: by biological and socio-cultural factors. For example - Amram (2007) proposed construct similar to the spiritual sensitivity - spiritual intelligence – and in research aimed at the construction of scale came to such conclusions. Trzebiatowska and Bruce (2012) notice that in studies conducted by Gallup since 1945, regardless of the indicators, women appear to be more involved in religion and spirituality than men. Similar patterns show in studies psychologists, sociologists, religion experts, and even neurologists or biochemists, for example: Brown (2000), Stark (2002), Heelas (2005), Bryant (2007), Day (2008), Zuckerman (2014).

Zohar and Marshall (2001) claim that spiritual intelligence is biologically conditioned and has a relationship with the activity of certain centers in the brain. Newberg (2006) studying the Franciscan sisters, Tibetan monks and Pentecostal using methods of scanning the brain discovered activity of specific brain centers during prayer, meditation and the practice of "speaking in languages". Presenting the spiritual items in Persinger (1983, 1987) and Ramachandran (1997) experiments resulted in the brain activity in the area called "God's Point", in the right temporal lobe. Another empirical fact to look for sources of spiritual sensitivity in biological conditions are neurological data - nerve oscillation (40Hz - so called

Gamma oscillations) covering the whole brain (Llinas, 1993). There is also evidence of the biological determinants of skills that make up the spiritual sensitivity - eg. empathy, for which serves a special system of neurons (mirror neuron system) (Gallese, 2003). Other findings allow to associate spiritual sensitivity with genetics. Kirk (1999) and Hamer (2004) in research of single-sex twins discovered the gene that coincides with a tendency to self - transcencendence.

A higher level of spiritual sensitivity in women case can also be caused by social factors - socialization and gender stereotypes that define the desirable characteristics of men and women. Socialization "learns" women to pay more attention to emotions, to read and understand verbal and nonverbal signals. Men are subject to more restrictive socialization, as far as regulation and expression of emotions. This is reflected in the openness to their own spirituality and way of living it. About the necessity of the secondary "open" men in spirituality wrote for example Longwood et al. (2004). The authors also point to the fact that the ideal of masculinity are related to: independence, control, rationality, self-sufficiency, activity, competence, and emotional reticence's. Engaging in spirituality, including faith and religiosity raises in many men fear not to become less masculine, because the sphere of spirituality (including religion) is dominated by women, by them associated with such qualities as: sentimentality, emotionality, weakness, dependency and irrationality. That is how men think, despite the fact that the majority of them consider spirituality as important sphere of life (Chickering, 2004; Herndon, 2003; Bennett, 2004; Sax, 2004). Aune and Vincett (2010) argue that religion and spirituality naturally uses the "stereotypical female" characteristics associated with involvement in relationships and emotional expression. According to Zuckerman (2014), the boys are brought up to a more assertive and independent, and the girls to more dependency, focused on relationships, what making them more likely to return toward spirituality and religion. Day (2008) argues that women explain the religious and spiritual experience in terms of protection and belonging, and according to Heelas (2005) assess their quality of life in context of satisfaction from relationships, in contrast to men who look at quality of life rather in the context of an effective, autonomous, individual, competent action in the world. Zuckerman (2014) suggests that in most societies, men have a higher social status, more privileges, and control the spheres of economic, political, social, to a greater extent than women, and that is why women tend to seek support in a higher power - turning to religion and spirituality. According to Bryant (2007) greater involvement of women in religion and spirituality is associated with a weaker intensity of skepticism than in men case.

And finally - a higher level of spiritual sensitivity in women case may be conditioned by evolution. Evolutionary factor may explain the potentially higher scores of women in "stereotypically feminine" scales - Openness to the Other People, Holism and Harmony and Aesthetic Sensitivity. In case of first and second component, the diversity is associated with the tasks attributed to women - they took care of home, the family, and children, while men went hunting. That's why women since always enjoyed greater empathy, protectiveness, pro - social and the ability to capture the tiniest interpersonal signals. Kanazawa (2010) argues that men are sex which more often search for experiences and risk than women, and religion and spirituality are according to him formed in the evolution process "means subjectively minimize the risk" or resource which facilitate coping with risk, and that is why women are more religious and spiritualized. Neurologists' research point also to the role of the evolutionary factor in sex differences on the perception of beauty (Cela-Conde et al., 2009). According to them, evolution form men' brain as the brain of the hunters, and women have the brain of foragers. This relationship translates directly into a different perception of space, proportion, balance, which configuration determines whether the object is considered as beautiful or not.


**Questions and hypotheses. The conceptual model of causal relationships between Gender and SSI.**

The present study investigates the relationship between seven dimensions of SSI as the dependent variables and the Gender as the independent variable. On the basis of our earlier observations and theory we formulated following questions:

Do IT Users perceive and present by themselves human spiritual sensitivity at the workplace?

What are the dimensions of spiritual sensitivity at the workplace?

Does IT users gender affect the spiritual sensitivity at the workplace?

Corresponding hypotheses were:

H1. The dimensions of spiritual sensitivity at the workplace are HH: Holism and Harmony

MSS: Wisdom, Consciousness, Meaning, RW: World View, EMS: Ethics, Morality, Conscience, OP: Openness to other people, Z: Engagement, WE: The Aesthetic Sensibility.

H2. IT Users perceive and present by themselves human spiritual sensitivity at the workplace.

H3. IT users gender affects the spiritual sensitivity at the workplace.

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Our conceptual model is depicted on Figure 1.



The conceptual model consists of two parts: 1) the measurement model that relates measured observable variables (within rectangles: for example HH1, …, ES2, ) to latent variables (in ellipses: SSI, HH, MSS, RW, EMS, OP, Z, ) and 2) the structural model that relates latent variables to one another (SSI, Gender). Variables in circles k1, k2, … concern residuals.
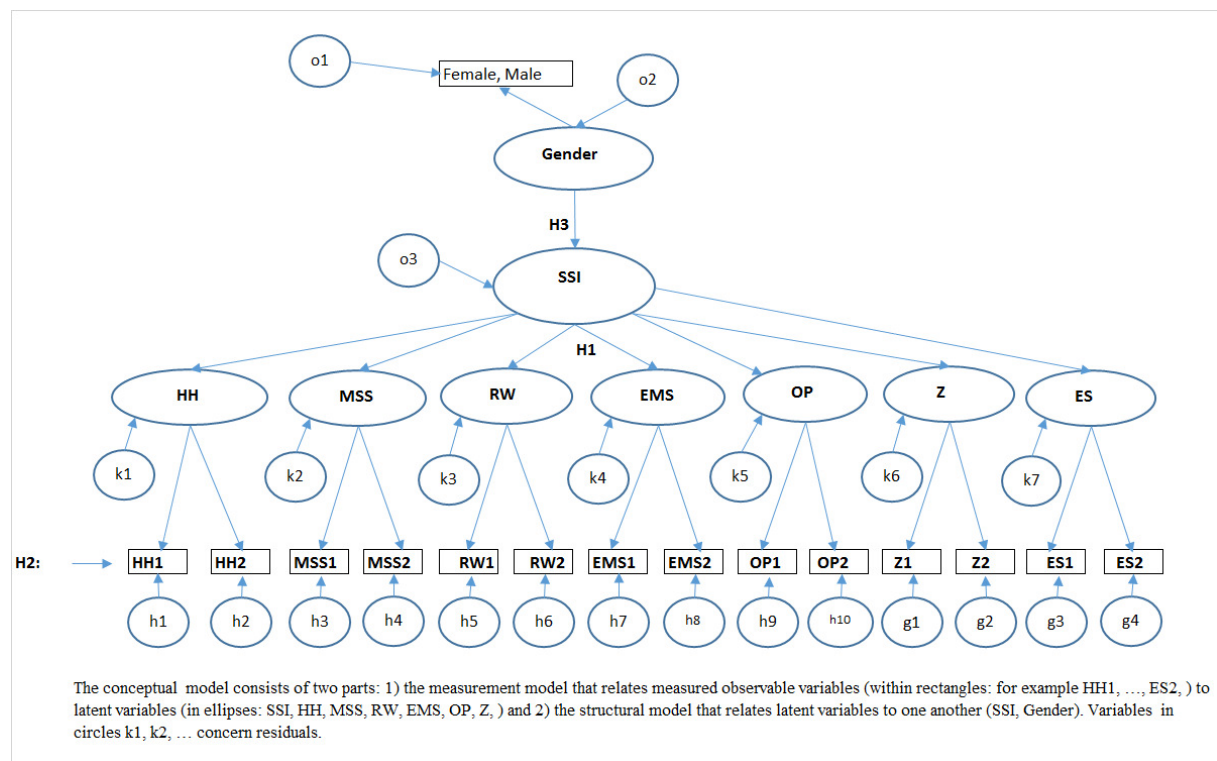
**Figure 1**

The sections of our paper are as follows.

## 3. METHODOLOGY

*Subject, methods and procedure*. To examine the research hypothesis that guided our experimental study, we applied a random interpersonal network and sequence sampling with the passive optimal experiment design [Kowal 1998; Kowal, 2002; Kowal, Węgłowska-Rzepa 2006]. To measure the dependent variables related to SSI we adopted dimensions of the full earlier version of the SSI [Straś-Romanowska et. al 2014, Straś-Romanowska, Kowal, Kapała 2016]. We shorten the SSI to fourteen questions but kept all dimensions [Table 1]. Our independent variable was gender. The shorten version of SSI we also translated into English, as depicted in Table 1 [Kowal, Roztocki 2015a; 2015b].

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**Table 1.** Items for Spiritual Sensitivity Inventory (SSI) (Adapted from Straś-Romanowska, Kowal, Kapała, 2014, and 2016)

| Dimensions | Items |
|---|---|
| HH: Holism and Harmony | Hh1: My life is a whole spiritual unity with other people. |
| | Hh2: Despite difficulties and adversities, I feel grateful to fate, when I think about my life. |
| MSS: Wisdom, Consciousness, Meaning | MSS1: I accept that not everything in life is certain, predictable and rational. |
| | MSS2: I have a strong need to understand the meaning of what happens to me in my life. |
| RW: World View | RW1:I have a sense of community and responsibility towards fellow believers. |
| | RW2: Thanks to faith I see the meaning of what happens to me in my life. |
| EMS: Ethics, Morality, Conscience | Ems1: There is a person representing moral authority to me. |
| | Ems2: I'm guided by moral ethical principles in decision making. |
| OP: Openness to other people | Op1: I'm certain that doing good pays off. |
| | Op2: I try to forgive those who hurt me even it is sometimes difficult. |
| Z: Engagement | Z1: My daily activities are accompanied by a sense of realization of universal values (truth, goodness, beauty, etc.). |
| | Z2: I try to organize my time so that I can find a moment to realize spiritual needs on every day basis. |
| WE: The Aesthetic Sensibility | WE1: I'm moved by and admire works of art. |
| | WE2: I can see the inner beauty in other people. |

Respond to every item by selecting one of the five possible answers: 1 – strongly disagree, 2 – rather disagree, 3 – rather disagree, 4 – strongly agree.
Source: own elaboration.

The adapted shorten version of the SSI was applied to survey a random experimental sample to a group of 400 subjects, differentiated in the sphere of gender, age, education and religion, representative of the general population. Population characteristics are depicted in Table 2a and Table 2b.

**Tab.2a**. Demographic characteristics of the population – gender and education

| Category | Number | Percent |
|---|---|---|
| **Gender** | | |
| Female | 200 | 50% |
| Male | 200 | 50% |
| Age | | |
| 20-35 | 139 | 35% |
| 36-60 | 133 | 33% |
| 61 and more | 128 | 32% |
| **Education** | | |
| Primary/ Gimnasium | 32 | 8% |
| Vocational | 34 | 8,5% |
| Secondary | 135 | 33% |
| Higher | 199 | 49% |
| Non-believer | 86 | 14% |
| Source: Own analysis | | |

**Tab.2b**. Demographic characteristics of the population – religion and world view

| Religion | Number | Percent |
|---|---|---|
| Roman-Catholic | 172 | 43% |
| Greek-Catholic | | |
| Orthodox | 40 | 10% |
| Protestant | 43 | 11% |
| Judaism | 32 | 8% |
| Islam | 25 | 6% |
| Bhuddism | 24 | 6% |
| Other | 8 | 2% |
| No affiliation/ atheism | | 14% |
| **World view** | | |
| Believer | 344 | 86% |
| Non-believer | 86 | 14% |
| Source: Own analysis | | |

The adaptation and validation process comprised the following steps [Hornowska, 2001, Kowal, Gurba, 2015, Kowal, Keplinger, 2015, Kowal, Roztocki, 2015a, Kowal, Roztocki, 2015b, Paluchowski, 2007, Peneva et al., 2008, Straś-Romanowska et al., 2014, 2016; Zawadzki, 2006) 1) analysis of the preliminary theoretical positions of the authors; 2) transforming of the indications for test operation, the test items, the instructions and the name of the test in the branch language of the users; 3) preliminary acceptance of the inventory and verification of the psychometrical characteristics of the items; 4) formulation of the final inventory version and evaluation of its reliability and validity; 5) the structural relations verification between the scales belonging to the questionnaire; 6) standardization of the test to the target population; 7) methodical indications preparing for the application of the test by creating instructions.

The aim of the inventory construction was to measure spiritual sensitivity at the workplace of the Polish IT users population. To examine the discriminant validity of the SSI, we verified with the Average Variance Extracted (AVE) method, if the amount of variance explained by the construct is significant (Fornell, Larcker 1981; MacKenzie et al. 2011, Kowal and Roztocki, 2015a, b; Straś-Romnowska et al. 2016). The AVE results for all were statistically significant and respectively greater than $AVE > 0.6$, which are quite satisfactory results for the shorten inventory.

Validity of the inventory manifests by content, criterion, and construct validity is related to the extent to which a tool measures what it is intended to measure (Cronbach, Meehl 1955, Kowal and Roztocki, 2015a, b). Constructs (dimensions, sub-dimensions, for example Openness to Other People, Aesthetic Sensitivity, Holism and Harmony, World view, etc.) validity is the most important to the overall observed validity of the inventory and we examined it by applying the methods of the Confirmatory Factor Analysis (CFA) as described by Thompson (2004), Bagozzi (2012), Sagan (2002), Kowal and Roztocki (2015a, b) and Stras-Romanowska et al. (2016).

The results of validity for adapted inventory were positive; the tracking errors data according to the RMSEA statistics were less than 0.1 for all dimensions and for configural invariance, metric invariance and scalar invariance (Romanowska et al., 2016). An external criterion of the validity evaluation - the average rates of compliance questionnaires given by competent judges (on a scale of 1 to 5) were high, (Kowal, Roztocki, 2015a, b; Straś-Romanowska et al., 2016). The Kendall's coefficient of concordance was strong and equal to W = 0.8.

Cronbach's alpha indicated good results of reliability - ability of an instrument to measure consistently (Kowal and Roztocki, 2015a, b). The Cronbach's alpha coefficients for each scale were between 0.6-0.8, and for the SSI were greater than 0.95 respectively. Average correlation coefficients for shorten inventory items changed from 0.3 to 0.5.

These analyzes support the hypothesis H1.

## 4. RESULTS

### 4.1 The levels of SSI

In the case of SSI the authors observed that IT users in Poland presented quite a high level of SSI (mean m=2.7, std=0.39, for scale from 1 to 4, Table 3). The changeability of expressions was moderately differentiated (from 14% to 24%). The most important dimensions of SSI for IT users were: ethics, morality, conscience (EMC: m= 2.98), spiritual commitment (Z: m=2.9), holism and harmony (HH: m= 2.79), wisdom, consciousness, meaning (WCM: m= 2.76), openness to other people (OP: m= 2.74), aesthetic, sensibility (ES: m= 2.65), religiosity and faith (RF: m= 2.2). Thus hypothesis H2 seems to be supported.

**Table 3.** Descriptive statistics and results of Student's t test

| Code | Dimension | Mean | STD | Rank(0–100) | Mean Male | Mean Female | p | STD Male | STD Female |
|------|-----------|------|-----|-------------|-----------|-------------|---|----------|------------|
| SSI | Spiritual Sensitivity: main construct, overall result of SSI | 2.7 | 0.39 | 67.43 | 2.62 | 2.78 | 0.00 | 0.36 | 0.40 |
| HH | Holism and Harmony | 2.79 | 0.35 | 69.73 | 2.77 | 2.80 | 0.19 | 0.33 | 0.37 |
| MSS | Wisdom, Consciousness, and Meaning | 2.76 | 0.39 | 68.94 | 2.73 | 2.79 | 0.08 | 0.37 | 0.41 |
| RW | Religiosity and Faith, World View | 2.2 | 0.89 | 55.02 | 2.18 | 2.23 | 0.30 | 0.85 | 0.94 |
| EMS | Moral and Ethical Conscience | 2.98 | 0.35 | 74.48 | 2.94 | 3.02 | 0.02 | 0.31 | 0.38 |
| OD | Openness to Other People | 2.74 | 0.38 | 68.59 | 2.71 | 2.77 | 0.06 | 0.33 | 0.42 |
| Z | Spiritual Commitment | 2.9 | 0.4 | 72.44 | 2.87 | 2.93 | 0.05 | 0.36 | 0.43 |
| WE | Aesthetic Sensitivity | 2.65 | 0.46 | 66.26 | 2.63 | 2.67 | 0.17 | 0.42 | 0.50 |

Source: own materials

| **Table. 4**. Model variables considered in CFA and SEM, with their correlations and factor loadings | | **λ** | r |
|---|---|---|---|
| | *Observable, endogenous variables – Spiritual Sensitivity Inventory claims (ID – SSI)* | | |
| **SSI-->MSS** | **Wisdom, Consciousness, and Meaning** | 0.7 | 0.7 |
| MSS-->MSS1 | I accept that not everything in life is certain, predictable, and rational. | 0.6 | 0.7 |
| MSS-->MSS2 | I have a strong need to understand the meaning of what happens to me in my life. | 0.9 | 0.7 |
| **SSI-->RW** | **Religiosity and Faith** | 0.7 | 0.7 |
| RW-->RW1 | I have a sense of community and responsibility towards fellow believers. | 0.9 | 0.9 |
| RW-->RW2 | Thanks to faith, I see the meaning of what happens to me in my life. | 0.9 | 0.9 |
| **SSI-->HH** | **Holism and Harmony** | 0.7 | 0.7 |
| HH-->HH1 | My life is a whole spiritual unity with other people. Rephrase: My life has a spiritual unit | 0.6 | 0.63 |
| HH-->HH2 | Despite difficulties and adversities, I feel grateful to fate, when I think about my life. | 0.63 | 0.56 |
| **SSI-->Z** | **Spiritual Commitment** | 0.7 | 0.7 |
| Z-->Z1 | I try to ensure agreement in my surroundings. | 0.77 | 0.77 |
| Z-->Z2 | My daily activities are accompanied by a sense of realization of universal values (truth, goodness, beauty, etc.) | 0.61 | 0.8 |
| **SSI-->WE** | **Aesthetic Sensitivity** | 0.7 | 0.8 |
| WE-->WE1 | The values I hold guides all my life. | 0.9 | 0.74 |
| WE-->WE2 | I feel uncomfortable when, for some reason, I have to stay in an unaesthetic (ugly, discordant) environment. | 0.55 | 0.6 |
| **SSI-->OD** | **Openness to Other People** | 0.7 | 0.73 |
| OD-->OD1 | I am aware that I multiply the good by helping others. | 0.8 | 0.71 |
| OD-->OD2 | I try to forgive those who hurt me, although it is sometimes difficult. | 0.65 | 0.64 |
| **SSI-->EMS** | **Moral and Ethical Conscience** | 0.7 | 0.73 |
| EMS-->EMS1 | I strive for spiritual development. | 0.5 | 0.64 |
| EMS-->EMS2 | I think that regardless of the circumstances, we should be guided by a higher value. | 0.7 | 0.64 |
| Gender→SSI | | -0.26 | -0.2 |
| Symbols | r-Pearson's correlation coefficient, λ- standardized factor loading (see Romanowska et al., 2016),. Source: own materials | | |

## 4. 2. Effect of Gender on Spiritual Sensitivity

The authors observed that IT users in Poland manifested high enough level of SSI.

There were significant statistical differences between male and female IT users in global SSI and most of its subscales. Female IT users have higher levels of global SSI (male: mm=2.62, female mf=2.78), Wisdom, Consciousness, and Meaning MSS (male: mm=2.73, female mf=2.79), Moral and Ethical Conscience EMS (male: mm=2.94, female mf=3.02), Openness to Other People OD (male: mm=2.71, female mf=2.77), Spiritual Commitment Z (male: mm=2.87, female mf=2.93). The differences were not very wide but significant. Thus hypotheses H1 and H3 are supported. The Student's test confirmed that the evaluation distributions for male and

female IT users were significantly different. The correlation coefficients were significant for gender and SSI (r-0.2) and EMS (r=-0.11). It means that gender has an effect on SSI, thus the hypothesis H3 is supported.

**Table 5.** Significant linear correlation coefficients between dimensions of SII and Gender (p<0.05)

| Variables | Gender | SSI | HH | MSŚ | RW | EMS | OD | Z | WE |
|---|---|---|---|---|---|---|---|---|---|
| Gender (Male 1, Female 0) | 1.00 | -0.20 | -0.04 | -0.07 | -0.03 | -0.11 | -0.08 | -0.08 | -0.05 |
| SSI | -0.20 | 1.00 | 0.02 | 0.21 | 0.10 | 0.23 | 0.16 | 0.25 | 0.16 |
| HH | -0.04 | 0.02 | 1.00 | 0.64 | 0.49 | 0.55 | 0.62 | 0.56 | 0.66 |
| MSS | -0.07 | 0.21 | 0.64 | 1.00 | 0.61 | 0.75 | 0.76 | 0.76 | 0.74 |
| RW | -0.03 | 0.10 | 0.49 | 0.61 | 1.00 | 0.50 | 0.36 | 0.56 | 0.53 |
| EMS | -0.11 | 0.23 | 0.55 | 0.75 | 0.50 | 1.00 | 0.72 | 0.85 | 0.68 |
| OD | -0.08 | 0.16 | 0.62 | 0.76 | 0.36 | 0.72 | 1.00 | 0.71 | 0.70 |
| Z | -0.08 | 0.25 | 0.56 | 0.76 | 0.56 | 0.85 | 0.71 | 1.00 | 0.68 |
| WE | -0.05 | 0.16 | 0.66 | 0.74 | 0.53 | 0.68 | 0.70 | 0.68 | 1.00 |

Source: Own materials

### 4.3. The Summary of The Global Research Model

In order to verify the hypotheses concerning the model depicted on Fig. 1 - the authors conducted also a series of analyzes using SEM with good results (Table 5-6). Our empirical experimental model based on the literature review and our earlier analytic research. Empirical SEM has two parts: 1) the measurement model which relates measured observable variables (within rectangles: for example HH1, HH2,…ES2) to latent variables (in ellipses: HH, RW etc); 2) the structural model that relates latent variables to one another (Gender→SSI). Variables in circles o1, o2, … are residuals. As can be seen from Tables 4-6 empirical correlations and the SEM analysis confirmed the influence of gender on SSI.

Thus all hypotheses H1-H3 seem to be supported.

**Tab.6**. Model fit in SEM - indicators for model and scales

|  | AVE | α | r | $\chi^2/df$ | RMSEA | p | GFI | AGFI |
|---|---|---|---|---|---|---|---|---|
| Global model | 0.70 | 0.7 | 0.3 | 4.7 | <0.05 | 0.01 | 0.99 | 0.98 |
| HH | 0.60 | 0.8 | 0.4 | 2.1 | <0.08 | 0.01 | 0.9 | 0.8 |
| MSŚ | 0.6 | 0.6 | 0.4 | 4.5 | <0.08 | 0.001 | 0.9 | 0.9 |
| RW | 0.7 | 0.8 | 0.3 | 6 | <0.1 | 0.001 | 0.9 | 0.8 |
| EMS | 0.7 | 0.68 | 0.5 | 3.8 | <0.08 | 0.002 | 0.92 | 0.9 |
| OD | 0.72 | 0.8 | 0.3 | 6 | <0.1 | 0.001 | 0.9 | 0.8 |
| Z | 0.73 | 0.74 | 0.5 | 4 | <0.08 | 0.002 | 0.9 | 0.3 |
| WE | 0.7 | 0.8 | 0.4 | 9.4 | <0.1 | 0.001 | 0.9 | 0.9 |
| SSI | 0.73 | 0.95 | 0.46 | 1.7 | <0.08 | 0.05 | 0.95 | 0.9 |

AVE - average variance extracted, α – Cronbach's α, r – mean correlation
between items, p – observed probability,
$\chi^2/$ df , RMSEA, GFI, AGFI - indicators of model fit
Source: own materials

# 5. CONCLUSIONS: APPLICATIONS AND CONTRIBUTIONS

Our experimental study helped us to answer formulated questions and confirmed hypotheses. Thus the dimensions of spiritual sensitivity at the workplace are HH: Holism and Harmony

MSS: Wisdom, Consciousness, Meaning, RW: World View, EMS: Ethics, Morality, Conscience, OP: Openness to other people, Z: Engagement, WE: The Aesthetic Sensibility.

According to Straś-Romaniowska et al (2016) spiritual sensitivity is a dimension that the harmoniously elusive, and the spiritual realm of ideational concrete, observable human activity (Emmons, 2000; Zohar and Marshall, 2001; Sisk and Torrance, 2001; Wigglesworth, 2003; Vaughan, 2003; and Korcz, 2006). This sensitivity gives spirituality cognitive-motivational meaning and serves as a bridge between what provides inspiration to a man to act. It relates values, ideals, and sense and actions taken (Straś-Romanowska et al. 2016) . According to the concept of Straś-Romanowska (1992, p. 45) the metaphysical realm, focused around the values of the sacred, sacrum and the subjective sphere, manifested in activity and self-fulfillment, determine the spiritual essence of a person. Also too, this essence or spirituality itself is understood by many as a kind of metasphere embracing or rather penetrating all areas of human life (Straś-Romanowska, 1992, Shannon, 2000, May, 2004; Wagener and Malony, 2006, Wiseman, 2007).

IT Users perceive and present by themselves human spiritual sensitivity at the workplace even at the high level. However IT users gender affects the spiritual sensitivity at the workplace. Female IT users have higher levels of global SSI, Wisdom, Consciousness, and Meaning MSS, Moral and Ethical Conscience EMS, Openness to Other People OD, Spiritual Commitment Z.

A higher level of female spiritual sensitivity can be caused by social factors - socialization and gender stereotypes that define the desirable characteristics of men and women. Socialization "learns" women to pay more attention to emotions, to read and understand verbal and nonverbal signals. Men are subject to more restrictive socialization, as far as regulation and expression of emotions. This is reflected in the openness to their own spirituality and way of living it.

Thanks to the skills that constitute spiritual sensitivity, a man pursues life's goals effectively, solves problems creatively, and copes with the life's tasks (Emmons, 2000). It is not surprising that the issue of spiritual sensitivity, including its diagnosis, may be relevant to many areas of life especially professional, individual and social life. A developed spiritual sensitivity is beneficial, not only in relationships between people, but also in the educational, professional and social domains (Zohar and Marshall, 2004; Wigglesworth, 2003; Korcz, 2006; Katz, 2007; Kowal & Gurba, 2016; Kowal & Roztocki, 2015a, 2015b).

Educational organizations can apply this reliable inventory to assist in the staff development to achieve organizational goals. Proper recruitment of leaders in business management can be useful to assist their underlying persons to perform professional tasks.

In religious activities, spiritual sensitivity can assist the religious profession in facilitation, coaching, therapy and spiritual advising of parishioners (Kriger, 1999; Wigglesworth, 2003; Hense, 2006; Amram, 2007). Helping understand spirituality can shape framework for religious study coursework or the recruitment of future leaders.

In education, and therapy, even self –therapy the development of the SSI also has important implications. Because the educational process involves not only the acquisition of knowledge, but also communication between individuals, the understanding and explaining of personality dimensions are important to future educational programs and therapy (Romanowska et al. 2016). Education consisting of values- based coursework and experiences which contribute to the formation of a mature whole personality can contribute positively and benefit the world (Kriger, 1999; Wigglesworth, 2003; Hense, 2006; Amram, 2007, Stra-Romanowska

et al. 2016). Spiritual sensitivity abilities are crucial for the effective performance of professional tasks, social roles, or religious roles.

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How information on archetypal symbolism in Internet can affect
the modern man travel as a kind of the self-therapy?

# How information on archetypal symbolism in Internet can affect the modern man travel as a kind of the self-therapy?

by

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## SUMMARY

The goal of the paper is to consider how information on archetypal symbolism in Internet can affect the modern man travel as a kind of the self-therapy In this paper there are presented issues related to possible to read from Internet descriptions of rituals, myths and archetypal symbolism also in relation to tourism in terms of C. G. Jung's depth psychology. The theme of the cultural role of ritual, myth and fairy tale is considered in relation to such issues like archetypes and complexes. Tourism is one of the elements of the culture - the whole material and spiritual achievements of mankind. When traveling, people get to know the language, religion, traditions, customs, rites and rituals of other cultures. Undertaken by modern man's journeys have psychological meaning, therefore in many myths and fairy tales there is often found an important Wanderer archetype.

**Key words**: rituals, myths, symbols, archetypes, Wanderer, travel

## ARTICLE

### Culture

When we are saying that tourism becomes an archetype but also the way of self-therapy and it is worth considering what deeper meaning of this expression is. The special role plays in this process information from Internet, concerning interesting places, and related with them rituals, myths or fairytails. Rituals accompanied by myths have always appeared in different cultures since the beginning of their history. But what exactly are rituals and accompanying them myths or fairy tales? How can they be understood in terms of depth psychology? Is it

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justifiable to state that tourism became a ritual, even therapeutic ritual? Why do people so often set to a long-distance journeys? During the journeys people willingly get to know customs, rituals, myths, stories and legends that can have therapeutic meaning. What is so fascinating about them that they continually draw our attention towards them? It seems that these burning matters can be thoroughly explained in the aspect of C.G. Jungian depth psychology.

Behaviors and attitude of humans are to a big extend determined by culture in which people are brought up. Culture exists as a certain material and spiritual human world created by: language, religion, traditions, customs, rites, rituals, law, knowledge, politics, art, fashion, food culture, technology, entertainment, tourism. Internet can help to develop culture that can have therapeutic meaning. Through higher aspects of life, culture has influence not only on formation of values, needs, attitudes, defines the perspective to perceive and understand our environment but it also creates the shape of the world through ascribing meanings to it. Meanings included in cultural rules, beliefs, norms, myths, symbols and rituals (Kowal et al. 2008[3]).

## Rituals and myths in culture

From the ancient times communities were creating rituals which were accompanied by myths what you can find in Internet. Rituals and myths have always been elements of culture and created the world through ascribing meaning to it. The meanings are included in cultural rules, beliefs, norms, myths, symbols and rituals. Rituals, myths and fairy tales can also have a healing function.

## Rituals

Rituals are considered today as a set of symbolic sequences of formalized acts and expressions created in order to achieve desired result which can, nevertheless, lie far away from the functional aim. Symbolism is specific for each given culture.

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[3] Kowal, J., Węgłowska-Rzepa, K., Park, H., Kuy H., L.,Soon, S. The cultural symbolism, integration and education of different nations in the light of comparative research of Polish, Korean and Philipean archetypal symbolism, (in:) Leniartek T. (red.), *Culural heritage as tourism motive*, WSZ EDUKACJA, Wrocław 2008, p.85-103.

Rituals are sometimes considered to be customs which in popular definition are understood in a wider perspective but in a qualitatively poor way. They are usually related to such phenomena as sacrum or taboo. Modern understanding of ritual is, to a big extend, simplified, automated, understood as a habit, whereas its original content and meaning lied much deeper. Rituals always accompanied important social behavior, including religious educational, therapeutic functions.

In psychological aspect some rituals as for example passage ritual are a symbolic transference of accelerated process of so-called individualization or growing[4].

Individualization is used not only in reference to individuals but also towards social groups, nationalities or countries. In case of an individual it is a process of individual differentiation whose aim is a development of individual personality. It embraces growth of consciousness of a unique psychological reality including not only strong points but also constraints and understanding of humanity as such. 'An individual is not just a simple single being but it includes some group relation (…), the process of individualization must lead to more intense and wider group relationships, not to isolation'[5]. 'Individualization has two aspects: first of all it is an internal and subjective process of integration, secondly, it is an inevitable process of objective relations development. None of them can exist separately, even though sometimes one of them can be more dominant'[6]. Described process of development embraces certain periods in life, each of them finishes and then the next one starts with some liminal passage crisis of 'the death of the old and birth of a new', very often symbolized in societies by rituals, for instance one of the Old-Slavonic rituals was the first haircut which was a ritual first haircut connected to the entrance of a young boy (at the age of 7 - 10) into adulthood and giving him a new name during a typical ceremony reserved for men.

For every phase of individualization there appears a characteristic dominance of certain archetypes e.g. factors and motives which order certain psychological elements by giving them a form of pictures[7] (archetypal) in a way that is recognized only on the basis of the achieved result (the form of chosen activity, myths, fairy tales, creations – for instances in the presence of symbols, colours, dream contents hidden in illustrations. In every phase of life and

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[4] Jacobi, J. (1993), Psychologia C.G. Junga, tłum. Stanisław Łypacewicz. Warszawa Wydawnictwo Wodnika. (Original: Die Psychologie von C.G. Jung, Walter-Verlag AG, Olsen, 1959).
[5] Szarp D. (1998), , op. cit. p. 71 in Definitions, CW 6, paragraph 758
[6] Szarp D. (1998), , op. cit. p. 71 in The Psychology of Transference, CW 16, paragraph 448
[7] Picture is a psychological product different from the object which it represents and indicates. Picture is something which includes opposites contrary to symbol which is a *mediator* between them (Samuels, as above: 135)

individualization of human being there are many archetypes (manifested through a kind of chosen activity) but one of them is always dominant. For instance in the early childhood The most dominant can be The Self and The Shadow, in adolescence and early adulthood – The Animus, later – The Anima, in the period of medium adulthood – The Great Mother, in the late adulthood The Wise Old Man and The Self. However, according to Jung 'Nobody ever reached a full complete individualization. Its aim is to achieve integrity and creation of healthy, efficient relations with The Self but the value of real individualization lies in what happens during its course of development'[8]. Below there are presented the meanings of six basic archetypes which can most frequently be met in symbolic form in myths, rituals and fairy tales. This knowledge people often gain from Internet looking for new interesting places for their journey.

**Culture and symbols in myths and rituals**

In terms of cross-cultural and analytical psychology when we talk about culture we must perceive it in connection to archetypal symbolism. Symbols in sociology and anthropology are treated as something characteristic for groups of people, institutions or types of institutions.

According to Jung a symbol is the best expression of an unknown. Each psychological expression is a symbol, if we assume that it describes or denotes more than the word itself, what lies beyond our knowledge [9].

Archetypes and symbols are present not only in historical materials but they can be encountered nowadays, in psychological life of people, they accompany many psychological processes (cognitive processes, dreams, imaginations, human creativity) constituting human life, influencing people's choices and decisions. Thus, archetypes form the basics for creation of the human future. Archetypal material, apart from compensation function has also prospective functions in which subconscious content and intuition play an important role[10].

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[8] Szarp D. (1998), , op. cit. p. 73 in The Psychology of Transference, CW 16, pararagraph 400

[9] Jung C. G., Archetypes and symbols. Selected works. Choice, translation, introduction: Archetypy i symbole. Pisma wybrane. Wybór, przekł., wstęp: Jerzy Prokopiuk. Warszawa: Czytelnik 1976. (Wyd. 2: 1981. Wyd. 3: 1993).

[10] Samuels, A., Shorter, B., Plaut, F. (1994), Krytyczny słownik analizy Jungowskiej. Tłum. Wojciech Bobecki, Lidia Zielińska. Wrocław, UNUS. (Original: A Critical Dictionary of Jungian Analysis. London, Routlege & Kegan Paul, 1986).

**Archetypes in myths and rituals**

Archetypes express their presence in human life through symbols to which people share similar reactions (similar associations and reactions are evoked in terms of experience, emotions, feelings, imaginations, fantasies) irrespectively from geographical area and cultures from which they originate. Individual and historical experience of people who come from different cultures have influence on reception and giving meanings to symbols of archetypal character. Sensitivity to symbolical sphere, expressed in preference of certain symbols, can emphasize their importance and meaning in the course of development of individualization process not only of single individuals but also social groups originating from different cultures. There is a possibility that as a result of culture crossing and transmission of symbolic materials there appears stimulation of archetypal sphere of people originating from different cultures and stimulation of their development [11]. Archetypes and archetypal symbolism are present and have certain functions in rituals and myths. Below there are presented the most important archetypes (cf. Kowal, Węgłowska-Rzepa 2008[12]).

Archetypes can be encountered in external activities, especially in those which concentrate around basic common experience of humanity like birth, maternity, death, separation, etc. They belong to human psyche and can be observed in relation to internal life expressed e.g. through archetypal symbolic figures like The Shadow, The Anima, The Animus, The Great Mother, The Wise Old Man, The Self[13]. Theoretically, there can be big amount of

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- [11] Kowal J., Węgłowska-Rzepa K., Cultural symbolism and integration and education of different communities, [w:] Smekal V., Gray H., Lewis Ch. A. (red.), Together we will learn. Ethnic minorities and education, Edice Psychologie Nakladatelstvi Barrister & Principal, Brno 2003, p.169-174

- Weglowska-Rzepa, K., Kowal K., Bem P., Park H.L. (2008), The Presence of Spiritual Archetypes Among Representatives of Eastern and Western Cultures, *Jung Journal*, Volume 2, Number 3, pp. 62–76, ISSN 1934-2039, electronic ISSN 1934-2047.© 2008 by the Virginia Allan Detloff Library, C.G. Jung Institute of San Francisco.

- Kowal J., Węgłowska-Rzepa K., A Vision of Oneself and of the Wporld – Constructive and Reconstructive Function of Narrative Stories , [in:] Knecht Z., „Gospodarka, Rynek, Edukacja" no 10, Wydawnictwo Wyższej Szkoły Zarządzania, Wrocław 2005, p. 6-12;

- Kowal J., Węgłowska-Rzepa K., Bem P., Lee Park H.,Symbole archetypowe a kultura. Badania porównawcze (Archetypal symbols and culture. Comparative research), [in:], . Krystyna Węgłowska-Rzepa, Don Fredericksen (red.), Między świadomością a nieświadomością , Wyd. Eneteia, Warszawa 2007, ISBN: 978-83-85713-75-3, R, p.293-225.

[12] Kowal, J., Węgłowska-Rzepa, K., Park, H., Kuy H., L.,Soon, S. (2008). Symbolika kulturowa, integracja i edukacja różnych narodowości w świetle badań porównawczych polskiej, koreańskiej i filipińskiej symboliki archetypowej. (W:) Leniartek, M. (red.), *Eksploracja przestrzeni historycznej*, Wrocław, Wydawnictwo Wyższej Szkoły Zarządzania , 2008. - p. 261-28

[13] Jacobi J.: Psychologia C.G. Junga, Wydawnictwo Wodnika, Warszawa, 1993.

archetypes. Archetypal content has potentially strong energy load, difficult to oppose. In critical situations they can trigger strong affect behaviors[14].

The Shadow archetype – it is expressed both as an individual Shadow and a collective Shadow. An individual Shadow is expressed through typical complexes, forgotten experiences and traumas and superseded positive aspirations and needs. This kind of Shadow is a source of neurosis, aggressive and auto-destructive behavior. A collective Shadow belongs to a deep, archetypal level of psyche and is rather repressed by a conscious mind . It is expressed in ideas and imaginations of hell, devil, sin, death, dark powers, monsters, demons, catastrophes, wildness.

The Anima archetype – it is a symbol of totality of feminine qualities, the image of female which, according to Jung, can be met in a male unconscious, an inner female aspect of men's personality. The Anima influences men's interactions with women, it allows men to contact with female qualities in an intuitive way. It is men symbolic guidance through unconscious and a basic factor to overcome male Shadow. The Anima archetype can be expressed both in positive and negative aspects. Positive Anima is often imagined as and ideal of beauty, woman – lover, ideal partner, carer, understanding woman. Its opposed imagination is often depicted as a seducer, vamp, courtesan, shrew. Positive Anima helps men to become a mature partner for women whereas negative Anima makes man dependent from women, vulnerable to manipulations or taking a role of an oppressor.

The Animus archetype – it is a symbol of masculine qualities, an image of man met in unconscious of a woman. Animus allows women to communicate with men in an intuitive way. It is women guide to collective unconscious. In a positive version Animus is imagined as a winner, hero, idol, ideal lover, whereas it negative version is depicted as a tough guy, gangster, tyran. Positive Animus makes women more independent, helps them to take a competitive, more intellectual, critical, distant to maternity and caring role attitude.

Symbolic equivalents of The Animus are: lover, idol, hero, winner, young god, whereas known persons: Hermes, Apollo, Hercules, Alexander the Great, Romeo, but it could be also a Child. Features of character ascribed to Animus are connected to such notions as: independence,

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[14] Kowal, J., Węgłowska-Rzepa, K., Park, H., Kuy H., L.,Soon, S. The cultural symbolism, integration and education of different nations in the light of comparative research of Polish, Korean and Philipean archetypal symbolism, (in:) Leniartek T. (red.), *Culural heritage as tourism motive*, WSZ EDUKACJA, Wrocław 2008, p.85-103.

self-reliance, activity, courage or competitiveness, aggressiveness, running away from maternity or risky situations.

The Great Mother Archetype – is a reflection of a general image created from a collective cultural experience. It is a impersonation of spiritual femininity. As an image it embraces not only an archetypal totality but also positive-negative polarization. The positive side is expressed in such features as motherly caring and sympathy, wisdom, instinct to protect, all that is gentle, caring, what facilitates growth and fertility. In other words it is an image of a 'good mother'. Negative pole, 'a bad mother', includes all that is hidden, dark, mysterious, destructive, terrifying, but cannot be avoided. The equivalent of The Great Mother is Nature – good and bad – at the same time. Other images are the figure of a Goddess, sacred woman, queen, mature woman, seducer, shaman, healer or a witch, she-devil.

The Great Mother archetype is a universal image of a mother and maternal attitude. It is depicted as a figure of a goddess, queen of life and death, mature woman, birth giver, mother nature. As an archetype it expresses ageless right to live and die. Vegetarianism, the divine goddess cult or matriarchy are also characteristic for this archetype.

In positive aspect it represents such features as protectiveness, liveliness, sensitivity or kindness. In the negative aspect it embraces: domination, destruction, death. The examples of a bad mother can be witch, hag, she-devil. The archetypal symbol of a Great Mother often takes form of a goddess (for instance in ancient Egypt – Isis, in Greece – Hera) or Mother Nature to whom all rite participants could direct their ask for help, in return, she might however require sacrifying a victim (e.g. cruel Hindu Kali goddess).

The Wise Old Man is an archetypal image of sense, it symbolizes spirit and wisdom of culture. It is a impersonation of male spirit. In psychology The Anima stays in the same relation to The Wise Old Man as a daughter to her father. For a female The Wise Old Man is the Animus aspect. The female equivalent of The Wise Old Man both for men and for women is the Great Mother. In rituals, religious transmissions, fairy tales, myths and in dreams this figure is depicted as an old man with special powers and great wisdom. This person plays the role of a prophet, sage, clairvoyant. It might also appear as a magician, shaman, wizard, sorcerer, king or sometimes as a guru, teacher, priest, spiritual master or a healer. Positive aspects of The Wise Old Man are: experience, reflection, consideration, wisdom, tolerance, generosity, he also represents such features as: maturity, performing miracles, secret knowledge. Negative aspects connected to this figure embrace: criticizing, harshness, intolerance, meanness, ruthlessness,

pride, arrogance, self-importance, exaggerated belief in own powers, abuse of power. The Wise Old Man figure appears in dreams and meditations taking a guru role, with magical powers. Therefore, Jung calls it a manic personality[15].

The Self archetype is an impersonation of perfection and totality. It is a symbol of unity, a picture of a man presented as a coherent whole in reference to his psyche and physical appearance. The nature of The Self stays unrecognizable but it is expressed in legends and myths. The Self appears as well in dreams, fairy tales, myths in a shape of 'supraordinate personality' such as a king, hero, prophet, savior. The self unifies symbolically opposing parts of human psyche; conscious and unconscious, female and male elements, material and spiritual aspect, rational and irrational functions, abstracts and facts. The Self is often symbolized in the form of mandalas, circle or square motives, number four as well as images of land of happiness, land of plenty, heaven, paradise. An individual can confront himself through The Self with the polarity of good and bad, with human and divine aspect. On one side The Self archetype can be compared to God, on the other to Demon – a determining power lacking in consciousness. Experiencing of The self is numinous, characteristic for religious revelation. The Self is the symbol of perfection and totality, archetype of coherence, the image of human being with integrated consciousness and unconscious and can be also th image of god. The Self unifies opposing aspects of human psyche. From artistic and symbolic perspective The Self is depicted as the mandala, circle or square motives, number four, heaven or paradise imaginations. In the psychological aspect The Self is expressed through such features as: inner harmony, peacefulness, self-awareness, capability to understand events, tolerance, high morale.

In Table 1 there are presented images symbolizing six the most important archetypes[16]:

- The Shadow archetype was depicted as 1) illustration of a wolf, 2) an ashtray full of cigarette butts, 3) picture of a damaged face of a woman
- The Anima archetype 4) illustration of a painting 'Lady with an Ermine', 5) a young woman in a lacy transparent outfit, 6) naked women in nature
- The Animus archetype: 7) illustration of fighting wrestlers, 8) a young man (macho type) in a black outfit, 9) parade of soldiers

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[15] Fragments entitled Osobowość maniczna (Przeł. Jerzy Prokopiuk. W: Carl Gustav Jung: Archetypy i symbole. Pisma wybrane. Wybór, przekł., wstęp: Jerzy Prokopiuk. Warszawa: Czytelnik 1976. (Wyd. 2: 1981. Wyd. 3: 1993). p. 84-101)

[16] por. Węgłowska-Rzepa K., Kowal J., Bem P., Lee Park H.,Symbole archetypowe a kultura. Badania porównawcze (Archetypal symbols and culture. Comparative research), [w:], . Węgłowska Rzepa, Don Fredericksen (red.), Między świadomością a nieświadomością , Wyd. Eneteia, Warszawa 2007, ISBN: 978-83-85713-75-3, R, s.293-225.

- The Great Mother archetype: 10) a woman feeding a baby, 11) Hindu family, 12) sheaves of grain
- The Wise Old Man archetype: 13) an old Chinese man with a ginseng root, 14) the pope with a child in his arms, 15) a portrait of an elderly man
- The Self archetype: 16) the manadala, 17) a yin-yang symbol, 18) a landscape showing the sky, the sea and the sun coming from behind the clouds

**Religious rituals**

During vacation people love to visit new places and to observe rituals. They try to find such propositions from Internet. Rituals have social character and can be encountered in all religions. They are often connected with witchcraft, magic, prayers[17]. Rituals as a social factor are a valuable element which link all the cultures together. They also help to link individuals of a given community with respect to beliefs and values. The power of prayer and magic is generated as a result of ritual activities and comes from engaging in rituals in a subconscious way. Psychological aspects of rituals are very important. Psychologist of religion, Alexander S. Holub, was arguing that all religious ceremonies are of magical character and, in fact, they are prayers in the highest form, because their main reason is intentional. They are created in order to facilitate contact with a god [18].

**Methods of creation of rituals**

The place of conscious mind is situated in the left hemisphere of the brain. The right hemisphere is connected to subconscious, archetypes, symbols and emotions. An individual must find a ritual that would be adequate to the method in which our brain works. Members of some community take rituals created by some other groups or create their own ones. Finding appropriate components of a ritual and ordering them in a certain legitimate regularity or a process requires experimenting. According to K. Hughes there are no good or bad rituals as long as they affect an individual. However, there are some elements which appeared to be extremely successful throughout centuries in many cultures and belief systems such as for instance symbols, archetypes, myths, mythical songs or specific repetitiveness of certain activities that may put its performers into trance (rhythmical drum beating, repeating certain

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[17] Jung C. G. Symbol przemiany w mszy. Przeł. Robert Reszke. Warszawa: Wydawnictwo Sen 1992.
[18] Hughes K., Ritual, psychology, Carl Jung and archetypes - Atlanta Paganism | Examiner.com

words, syllables or musical phrases). Not only in the past but also nowadays the way of interaction of rituals was observed and examined in order to reveal what it is, in a psychological meaning, that it has such a strong influence on a social group. After the ritual is created on the basis of a feeling that it is the right way, then it should be practiced for such a period that it becomes so known that performing it does not require any further concentration. If a ritual becomes automated, then it is more sufficient and its power is huge.

Religious rituals are for instance: initiation (baptism, circumcision), passage (e.g. wedding) or isolation (funeral). At present we can also distinguish secular rituals: political passage (e.g. diploma thesis defense), entertainment (mass), everyday, corporal rituals (tattoos, make-ups) or professional ones (e.g. initiation in the army) – nevertheless, it is a certain simplification of the meaning of a ritual that originally had deeper sense.

**Trance in rituals**

Rituals are performed by a priest or a shaman. In many primitive cultures the aim of shaman rites is to cure people and animals, fight with natural elements and cataclysms or fortune telling[19]. Such rituals were carried out by specially predestined persons who were said to possess the ability to contact the spirits directly in a state of a trance and ecstasy evoked as a result of trance-creating techniques, for instance in an ecstatic dance accompanied with singing and drums, sometimes supported with hallucinogens. A trance was supposed to guide them in an afterlife and shaman was 'a transmitter of cosmic hierophany'. Songs could be of mythical character, whereas outfits and accessories to them were symbolic in each community and culture.

From the psychological point of view the state of altered consciousness could be reached as a result of the following procedures[20], [21]:

1. reduction of senses stimulation through cutting out the majority of stimuli (sensory deprivation) as a result of shaman preparations, quieting the mind, meditation in solitude, monotonously repeated stimuli (rhythmical drums, dancing, singing, mantra recitation);

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[19] Szyjewski A., Shamanism. Szamanizm, Wydawnictwo WAM, Kraków 2005, p. 115-152
[20] Winkelam M., Shamanism: The Neural Ecology of Consciousness and Healing [Hardcover], Greenwood Publishing Group Inc. US, 2000
[21] Szyjewski A., op. Cit., 2005, p. 127-128

2. intensive stimulation of the senses, stimuli overload (sensory overload) through exhaustive activities or physical exercise, strong emotional arousal and mental efforts (mostly a dance accompanied by rhythmical drums);

3. invoking of readiness or mental commitment in a given activity through fervent prayer, total commitment to religious activities, listening to dynamic speakers, meditation over subject matter;

4. lowering the state of commitment and readiness, rest from all everyday activities through passive state of mind with minimal amount of activities, deliberate thinking about reaching the aim;

5. introduction into the body psychoactive substances or stimulating the brain to produce them for instance through lack of sleep, dehydration, hypoglycemia caused by fasting, hormonal disorders or hyperventilation.

Shamans always used different measures to different rites. The consequence of their activities was a state of ecstasy described as a flight of soul and possibility to contact god. Shaman trance can be of different depth, ranging from the state of slight dizziness to full loss of control.

**Ritual functions on example of initiation rituals**

According to C.G. Jung aggression as an original potential must be necessarily limited with means of rituals. Until the moment when aggression is recognized and named it has a destructive power: ' When we do not understand what archetype is, then we are in its power' – stated Jung. Rage expressed in an uncontrolled way damages our 'self' capacity to cumulate emotions and direct them in a right way, whereas properly directed rage can work miracles[22].

Some primitive tribes cause and cumulate aggression, during initiation rites for young boys, so that it does not become dangerous for an individual or the whole community. The meaning may lie for instance in dressing a boy like a 'fighter-predator'- a leopard or a tiger. Such rituals require physical strength and courage and also specific transformation of human nature in which aggression is created in order to make the boy feel like a predator. 'During this

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[22] Schoeller G., Izyda w poszukiwaniu boskiej tajemnicy, 1991 by Kösel-Verlag GmbH & Co, München, Wydawnictwo ASTRUM, Wrocław 2000

ritual human lifestyle was strengthened and an individual who was a subject to it had his part in a higher form of spiritual, or animalistic life' (Shoeller, 2000, p.: 122-123).


**Passage rituals and tourism**

Crossing 'thresholds' in life is in Carl Gustav Jung depth psychology an archetypal motive. It embraces collective events connected to human life such as: birth, passage to adolescence, then to mature age, aging and death. Passage rituals were most commonly met in breakthrough periods of life of a man, it was symbolically connected to passing from one phase of life into the next one, from one age or social group to another. All 'crossing the threshold rituals' can be described according to a threefold rule: separation-passage-return and integration, nevertheless their length in time are so different that some can be almost unnoticeable, other may last for years.

Tourism (very often so called Internet tourism) and the quality of tourist experience can be considered, in a little humorous way, with respect to assumptions of passage ritual, characterizing metamorphoses (receiving and giving) of certain property to an individual who is not subject to it. Ritual character may be ascribed to rites and customs connected to physical change of place: passing the border of certain area, moving to a new spot, journey (especially sacral pilgrimage). The analysis of a threshold crossing ritual in a journey emphasizes three different phases:

- Phase of separation – exclusion (preliminary) – its main aim was to make the community aware that they intercourse with an individual taking part in a passage ritual. Such individual was deprived of previous status, excluded from the group through the following procedures:
    - ritual outfit or nudity (during journeys we often use tourist outfits, on the beach we are dresses in a modest swimming costumes),
    - removal from community (during journeys we are often away from business, family or friends environment),
    - isolation (seclusion) – in journey we are often secluded in means of transport or we live in tents, hotels or places isolated from a local community,
    - painting or bodily, face mutilation – before journeys women (sometimes also men) make cosmetic procedures, during vacation young people often make painted tattoos, on summer camps there is a ritual of accepting the first time campers connected to necessity of passing through difficult trials in order to be accepted as a member of a team – activities that the first camper must overcome

    include not only smearing the participant with a toothpaste or paint but also passing to the next point, so they include a ritual 'death';

- o one of the features of this phase is a ritual 'death' (dream, fainting, fall, exhaustion); during tourist trips the participants like to sleep longer, get tired with various sightseeing attractions, extreme sports or even use of some stimuli like big amounts of alcohol during a 'meet and greet session; also during summer camp 'initiation' events sometimes the organizers dress up like devils and urge the first campers who undergo the initiation phase to prepared 'hell';

- Marginal Phase (transitional period) – when an individual was already deprived of a previous social role but did not acquire a new one (in journey – tourist is on holidays, thus, does not work, but rests and goes on sightseeing) which may last from a few minutes to a period of many years (nowadays there are people that can be described in terms of 'permanent' globetrotters).

- Return phase and integration (assimilation) – acquiring a new status. In tourism – the participant of a trip learns how to windsurf or for instance reaches the top of a hill – gets the status of an alpinist, the one who visits the places of religious importance – acquires a pilgrim status. Nevertheless, after achieving certain goal, we usually return to our everyday life duties – work and household.

- There is also a myth of Wanderer in addition to the above mentioned elements.

**Myths vs archetype and complex**

    A myth is a symbolic story describing the creation of the world (cosmogony), vision of its end (eschatology), but also describing the surrounding us world. From the very beginning myths were linked to rituals, they described history of gods, exceptional heroes and demons or the creation of a man and history of ancient families. They try to give the answers to questions which always accompanied human existence, life and death, good and bad, mysticism and the meaning of existence, salvation of a man. Examining of creation processes in different fields of culture (e.g. science, art, religion, etc.) shows an inevitable presence of mythical element in every creation act in whose effect one can achieve cultural *novum* in creation [23]. The themes appearing in histories that have mythical character are linked not only to such issues as survival

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[23] Motycka A. Świadomość mityczna a kulturowy proces twórczy, VIII FORUM Inspiracji Jungowskich, ENETEIA, Warszawa 2003, referat

of the world, repetitiveness of birth and death, passing of life, coexistence of man and nature in harmony, destructive activities of man on the earth, nature devastation, war and peace but also cultivation of spiritual values and passing it to next generations or the meaning of a family or the whole nation[24]. A myth creates personality patterns, sets of visions and behaviors, models of understanding and experiencing the world, based on common beliefs and perceptions of a community resulting from its emotions, desires and values rather than from rational thinking.

According to C.G. Jung a myth is an unintentional collective ascertainment based on unconscious mental experience. 'Primitive mentality does not invent myths but experiences them. Myths are a primitive revelation of preconscious psyche…Many of the unconscious processes may be directly caused by consciousness but they are never the result of a conscious choice. Other seem to be created spontaneously, that is not in effect of noticeable cause or the one that can be proven'[25].

Myths of a certain society have always reflected other possible worlds. Forms of myths could have been different which resulted from various times of their creation. Most commonly the truth included in them was timeless. The character of myths was symbolic and archetypal and myths reflected human complexes.

Complex is emotionally-toned group of ideas and pictures. According to C.G. Jung a complex is an image of certain psychic situation which is strongly accentuated emotionally and incompatible with a habitual attitude of consciousness[26]. Complexes can be defined as 'emotionally toned ideas' which are, throughout years, created around certain stereotypes, for instance father or mother archetype. When complexes constellate they are always accompanied by affect e.g. emotional reactions characterized with physical symptoms and disturbances in thinking. Affects occur in spot where man is the least adjusted and they reveal the cause of the maladjustment which is some form of undervaluation and lowering of personality level[27]. Negative result of a complex can be experienced through disorders of some psychological functions (feelings, thinking, intuition and perception). Instead of formulation of healthy

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[24] Weglowska-Rzepa K.,, Kowal, J., Bem P., Park H., (2005) Archetypal symbols, their reception and meaning for Polish and Korean societies – comparative research, referat prezentowany na konferencji,: *2nd International Academic Conference of Analytical Psychology & Jungian Studie*s, 7-10 July, 2005; Texas A & M University, USA

[25] Sharp, D., Leksykon pojęć I idei C. G. Junga, Wydawnicwto Wrocłąwskie, 1998, p. 105 in: The Psychology of the Child Archetype, CW 9 I, par. 261

[26]Sharp, D., Leksykon pojęć I idei C. G. Junga, Wydawnicwto Wrocłąwskie, 1998, s. 88-93, za: JunReview of the Complex Theory, CW 8, par. 201g C. G., A

[27] Sharp, D., Leksykon pojęć I idei C. G. Junga, Wydawnicwto Wrocłąwskie, 1998, s. 23, za: The Shadow (Aion), CW9 II, par. 15

Kowal

How information on archetypal symbolism in Internet can affect
the modern man travel as a kind of the self-therapy?

judgments and react in an emotionally proper way, we react accordingly to what complexes dictate us. As long as a human being is not conscious about his complexes, then he is susceptible to its influence. In the scope of known complexes there are: mother or father complex, Oedipus complex (occurring in a Greek myth about king Oedipus), Jocasta complex, narcissism, power complex. The above mentioned complexes can be undoubtedly encountered in Greek or Egyptian myths; they are constellated around archetypes.

Archetypes are primitive, structural elements of human psyche (totality of all psychological processes, both conscious and unconscious). They are expressed both on a personal level through complexes and on collective level as traits of entire cultures. They constitute not only readiness for actions systems but also images and emotions. Archetypes are brain structure inherited; they are inherited possibilities of ideas, common for everyone. They do not appear for themselves but their effects can be distinguished in archetypal images and motives. Archetypes are factors and motives which order some psychic elements giving them a form of archetypal images in a way recognized only on the basis of achieved result, for instance painted picture or conscious dream. They are also 'instinct images', the forms that instincts assume.

In myths, similarly as in fairy tales, most commonly there appear symbolic figures representing six basic archetypes: The Shadow, The Anima, The Animus, The Great Mother, The Wise Old Man, The Self which played certain roles.

A myth was supposed to lead to healing of a soul or initiation of power which took place during rituals or only through story telling. A myth referred in rituals to the space of prehistoric times which allowed its participants to look perspectively at their lives, reflections, needs to change and revival of spiritual strength.

**Fairy tales**

During rituals young generations also got acquainted with folktales. Fairy tales express old folk beliefs, primitive animism, certain moral system. The content of a fairy tale conveys belief in continuous impact of supernatural powers on human world. Folktales include certain moral problems and the plot appearing in them most commonly refers to:

- the battle of good versus evil motive where bad is often stronger than good,
- but good is finally victorious paying the price with a loss;
- co-inherence of real and supernatural world;
- victory of love, good and fairness motive;
- motive of wandering of the protagonist, trials that he has to undergo after which it is possible to get a universal cure or a hand of a princess or reveal some truth or a secret;
- motive of sage who is a moral guidepost for a hero endowed with exceptional power and secret knowledge.

The form of a fairy tale is often accompanied with certain characteristic expressions signalizing its beginning (e.g. 'Long time ago', 'Once upon a time') or the end (e.g. 'and they lived happily ever after'). Fairy tales have culture-creating, educational, often therapeutic functions.


**The Wanderer archetype in life and journeys**

In all cultures one can encounter myths and fairy tales about wanderers, their incredible experiences and achievements. Each of them had to posses some traits of character, they could be either wise or stupid, courageous or cowardly, beautiful or repulsive, noble or mean. The figure of Wanderer is of universal character. His traits are often expressed in attitudes and behavior of people whom we meet in everyday life. It is the result of a fact that the Wanderer has archetypal, model character deeply rooted in human psyche. Influence of archetype can be seen in many situations – during rituals and customs, in art and literature, in methods of perception and assessment, in attitude shaping; in creation of culture norms, personal or business life, even if one is not aware of this fact. Currently tourist web pages arouse the desire to travel, awaken in us the archetypal of the Wanderer.

The Wanderer manifests himself often when we are tired and frustrated with a previous life, when we do not reach set goals, when we are dissatisfied with the effects of our own actions, thus, there appears a need to find the reasons of such a state. We want to find our own truth, individuality and identity, create ourselves from the beginning, take independent

Kowal

How information on archetypal symbolism in Internet can affect
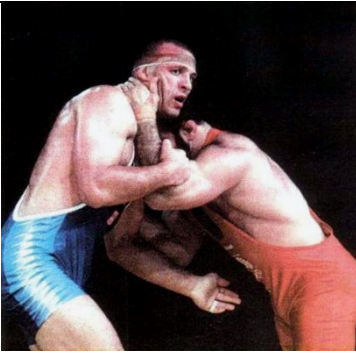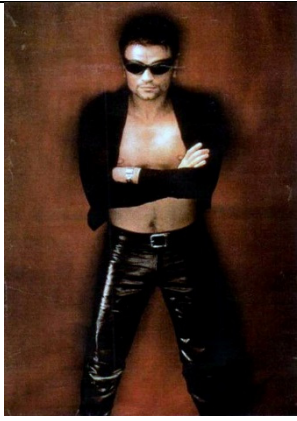the modern man travel as a kind of the self-therapy?

decisions concerning our time, place and goal in life. We set on a journey as Wanderers who learn how to be themselves. We start to be creative, we want to discover the value of honest relationships with other people. Sometimes Internet helps us to the Wanderer virtualy.
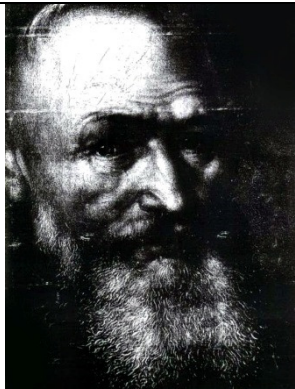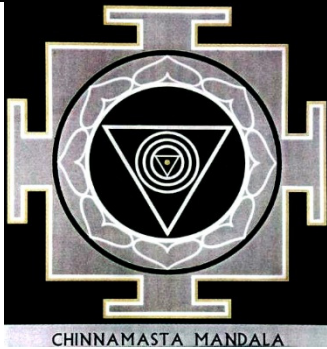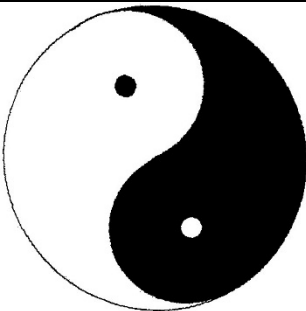
In philosophical literature there occurs, close to the Wanderer archetype, a notion of homo viator e.g. a man in a journey full of adventures who, in circle of Mediterranean culture and civilization, appears as a pilgrim or an immigrant. In Old Greek myths homo viator appeared under disguise of Odysseus searching his way back to Ithaca. The Wanderer archetype is often found in literature, this thread was described, among many, by Homer, Dante or more contemporary authors like Nietzsche, Rilke and Marcel, later by Joyce or Coelho[28]. Life of the Wanderer is a way full of dangers, pursuance to reach the aim, fulfillment and happiness. On one side, he traverses the world alone, gets experience, becomes wiser, must stand face to face with difficulties, on the other meets other people and as a social being inevitably learns how to build relations to them. The wanderer sometimes perceives the world as hostile and dangerous, sometimes as a home - friendly and open to him. He readily learns the customs, rituals and myths of new communities. As it has been mentioned before – myths constitute national heritage of each culture in its development processes[29]. Mythical beliefs, characteristic for mythic-metaphysical order of thinking include contents of archetypal origins (e.g. archetypal visions: pictures, images, symbols, ideas) – indispensable for all creation processes. Such contents express by means typical for a given culture a priori realize a supracultural condition of human existence of a man thrown into the world.

This pilgrimage, in a psychological meaning, is a journey into his own self, a trial to grasp his own 'self'. The life of the Wanderer is a symbol of man's individualization, whereas the desire to set into new journeys and learning the world is a reference to the old archetype whose aim is to get to know the world and to develop personality. Archetype is not only close to a contemporary man but also a cause to set in a long distance journeys.

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[28] cf. Olinkiewicz E., Radzymińska K., Styś H. (1999), "Słownika Encyklopedycznego - Język polski" Wydawnictwa Europas.
[29] Motycka A. Świadomość mityczna a kulturowy proces twórczy, VIII FORUM Inspiracji Jungowskich, ENETEIA, Warszawa 2003

| Illustrations representing archetypal symbolism in the aspect of C.J. Jung's depth psychology | | |
|---|---|---|
|  |  |  |
| The Shadow 1 | The Shadow 2 | The Shadow 3 |
|  |  |  |
| The Anima 4 | The Anima 5 | The Anima 6 |
|  |  |  |
| The Animus 7 | The Animus 8 | The Animus 9 |

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|  |  |  |
|---|---|---|
| The Great Mother 10 | The Great Mother 11 | The Great Mother 12 |
|  |  |  |
| Stary Mędrzec 13 | Stary Mędrzec 14 | Stary Mędrzec 15 |
|  |  |  |
| The Self 16 | The Self 17 | The Self 18 |

Source: Węgłowska-Rzepa K., Kowal J., Test Symob, research method, cf. Węgłowska-Rzepa, K., Kowal, J., Park, H., L, and Lee K. L. (2008). The Presence of Spiritual Archetypes Among Representatives of Eastern and Western Cultures, *Jung Journal*, Volume 2, Number 3, pp. 62–76, ISSN 1934-2039, electronic ISSN 1934-2047.© 2008 by the Virginia Allan Detloff Library, C.G. Jung Institute of San Francisco.

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# The telephone: tool for communication or tool of the unconscious?

by

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In recent years a growing polarization can be observed in analytical circles concerning the application of modern multimedia in therapy, especially the use of Skype and other instant messaging clients. On one hand, there is growing criticism and opposition, while on the other, this form of therapy is becoming increasingly prevalent. Various institutions are trying to take a stand on this issue. In Poland, the Polish Society for Psychodynamic Psychotherapy, connected with the Kraków Psychodynamic Center and one of the largest psychotherapeutical associations in Poland, has prohibited the use of Skype in therapeutic practice, recently inserting this point in its by-laws (www.psychodynamika.pl).

However, global reports also show a different trend. There is, for instance, the China American Psychoanalytic Alliance with more than 300 members who have been in analytic training for over 10 years, consisting of 3-4 Skype sessions per week. Reports on that were presented at the 2015 International Psychoanalytic Association conference in Boston by 12 speakers (Scharff and Varvin, 2014).

One of the most commonly raised arguments against teleanalysis is the fact that it introduces a third party between analyst and patient, creates a relationship with par-object, thereby violating neutrality and abstinence (Scharff, 2013). Another objection to teleanalysis refers to working with people who experienced trauma at a very early stage of their life. Such treatment can lead to a repetition of rejection trauma because of the setting and its limitations resulting from such a mode of conducting the session. Other authors clearly warn against the use of teleanalysis with very disturbed patients (deep personality disorders and severe depression with suicide risk) (Harris and Younggren, 2011). On the other hand, supporters of Skype therapy emphasize that the basic setting elements are provided, e.g. regularity, continuity of meetings.

In my opinion, some psychoanalysts may feel more free than others to use Skype and other instant messaging clients, especially the young generation of analysts, for whom IT is a way of life.

For Jungians, an important element of working through Skype is the phenomenon of synchronicity. Francise Bell paid attention to her feelings during a Skype session. She observed the relationship between sessions that were a challenge for the patient, her own countertransference feelings, and the technical difficulties during the session. For me as a Jungian psychoanalyst, however, this is not just a coincidence, but also the phenomenon of synchronicity. This can be related to the so-called "Pauli effect," hence to the joint work of physicist Wolfgang Pauli and Carl Gustav Jung, who studied the effect of synchronicity involving electromagnetic fields. Certain emotions of the patient can be split off from him or her and placed in the analyst's countertransference and in a phone or computer that stop working (Merchant, 2016, p. 319).

I will use a clinical example to illustrate this process. It involves a patient who has been in psychoanalysis for over three years due to severe somatization disorders (ICD 10 F45.0) manifesting as muscle pain in the feet, buttocks and upper limbs, and which seriously interfered with his daily functioning. In periods of symptom intensification the patient was not able to attend sessions in the therapeutic office. Sometimes he missed 4 or 5 sessions in a row, also incurring financial responsibility. I decided to introduce phone sessions in order to be able to examine the mental process in acute somatization states.

In the countertransference, I noticed a growing frustration with the lack of ability to attach psychological meaning to the patient's symptoms and the appearing technical problems with the phone or sudden doorbell sounds in his apartment, caused, for instance, by the appearance of a postman or interviewers. The patient cut himself off from difficult emotions and placed them in the analyst and external technical problems. This usually happened in situations preceded by strong countertransference feelings in me. This example of unconscious communication, in which intense affect appeared in the therapeutic relationship, helped in better understanding of the patient's internal dynamics based on the splitting off of emotions placed in external objects and in his own unconscious, for which the body became a container through pain symptoms.

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# Session:

## Research in progress – Educational, Psychological and Managerial Aspects of ICT Communication

# Modern information and communication technologies in teaching and learning of environmental sciences

by

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## STATE OF THE ART AND PURPOSE

The purpose of the paper is to analyzes theoretical and practical approaches to the use of information and communication technologies in teaching and learning of environmental sciences. In addition, the study was aimed to establish the chronology of the development of information and communication technologies in educational process and on its basis to clarify and highlight the role of information and communication technologies in acquiring environmental competencies.

## DESIGN/METHODOLOGY

The study was carried out on the basis of qualitative and quantitative methods. The study attempts to determine the relationship between IT-technologies and environmental sciences learning using techniques for analyzing and summarizing data.

## RESULTS

The article provides key aspects of the use of information teaching methods in environmental education, analyzes the possibilities of using environmental issues from the Internet resources in the academic process at universities as well as demonstrates the advantages and requirements for multimedia presentations as the most common information teaching method.

## LIMITATIONS

Studies should be continued by further research into information and communication technologies applied in the academic process at some universities of Europe and the US.

## RESEARCH/PRACTICAL IMPLICATIONS

The conclusions of our research can be addressed to faculties, PhD students, ICT users and professionals.

## ORIGINALITY/VALUE

The study supplements the theory and practice of environmental education; highlights the practical aspects of utilizing the Internet resources to develop environmental competencies of students; provides specific recommendations for synergic combination synthesis of professionalism with information and communication competencies of future specialists.

**Keywords**: teaching, information and communication technologies, environmental education, universities, competencies

# Importance of personal competencies and their development as a part of higher education

by

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The paper focuses on the possibility of targeted competencies development of University students. It is common for university graduates that they are adequately equipped with knowledge in their primary fields of study, but they face limitations in terms of personal competencies. But it is known that the actual level of personal competencies often tends to be the decisive employability factor of individual graduates. We introduce the concepts of competencies, competency models, and possible ways of using this concept primarily for management education of college students. Techniques and methods of metacognitive abilities development are described in greater detail.

## INTRODUCTION

The labour market is currently affected by many factors and puts great demands on job candidates. Due to the constantly evolving communication and information technologies, economic growth and social changes, advantage belongs to candidates who are flexible, well equipped with good personal competencies and willing to constantly learn and grow.

Generally, we can say that graduates of Czech (as well as foreign) universities are adequately equipped with knowledge in relation to their primary fields of study, but they are limited in terms of the level of their personal competencies. But developed competencies are often the decisive factor for the candidates´ employability and form their personal "competitive advantage" on the labour market. We understand competencies as soft skills, abilities and behavioural manifestations, ie. "a competent is the individual who is able to successfully develop and utilise his 'human capital', ie. all his abilities, knowledge, skills, experience and sources of motivation" (Veteška, Tureckiová, 2008, p. 17).

During their university studies, students prepare specifically for their future professional career. They have the possibility of acquiring not only the necessary knowledge, but ideally also the necessary personal skills that will allow them to find adequate job in their field in the

future when they become fresh graduates. Whether they are also able to develop their personal competencies is, nevertheless, very individual. Particularly in study programmes that include psychologically oriented subjects students often demonstrate varying level of the ability to truly understand various psychological processes and think of them in relation to themselves, ie. to observe their own functioning. It is these metacognitive aspects of thinking that constitute the basis of self-reflection and thus form the essential prerequisites for personal development.

## PERIOD OF TERTIARY STUDIES AS A STAGE OF PERSONAL DEVELOPMENT

The period of transition from high school to university is full of changes in various areas. American psychologist Arnett (2000) states that this time offers the greatest number of opportunities for discovering one´s identity in many various areas and this period should therefore be separated from other life stages and titled „emerging adulthood". He refers to Erikson´s stage of identity versus confusion of roles which Erikson (2015) related to the period of adolescence. Arnett, however, views the topic of identity as a key aspect of the emerging adulthood (even Erikson believed that industrial society will lead to the prolongation of adolescence for identification of identity). Researches show that development of identity is rarely completed at the high school and university students therefore have (in comparison to those, who start employment immediately after their high school studies) the advantage of being able to further grow in terms of knowledge, personality and of competencies. However, not all university students are able to develop their personal competencies sufficiently. This leads to great differences among the students that can ultimately lead to their future success on the labour market.

## COMPETENCIES AND COMPETENCY MODELS

D. Mertens described key competencies as elements of education the content of which supersedes other educational goals. They help people function in practical aspects of their career and personal life and facilitate the development of further knowledge (Srbecká 2010, Belz, Siegrist 2001). Hroník (2007) defines competencies in a similar way – it is a set of knowledge, skills, experience and personal qualities that assist individuals in achieving goals and can be seen in his behaviour.

In practice competencies are often described in files, so called Competency Models. These are several competencies defined in relation to a specific role or position. Belz and

Siegrist (2001) offer a practical way of thinking about competency models. They divide competencies to three groups – intrapersonal (in relation to oneself), interpersonal (social) and methodical (in relation to one's ability to work and achieve goals). These three competency groups can be further branched to specific sub-competencies. Vaculík (2010) lists similar groups of competencies. He describes competencies that apply to a) one´s approach to problems, b) one´s approach to other people, c) one´s approach to him/herself. Koleňák et al. (2013) set aside a group of specific competencies, so called Subtle Skills. These are very subtle skills which all people naturally possess, but in very various degrees.

## DEVELOPMENT OF COMPETENCIES OF STUDENTS IN COLLEGE

The topic of competencies in tertiary education is frequently associated with the entry of graduates to the labour market. Employers confirm that very different graduates come from the same study programmes and specializations and that they (the employers) emphasize different set of knowledge and skills than academics do (Ryška, Zelenka, 2011). The discussion revolves about what is more important – expert knowledge or developed competencies? Developed competencies often determine the successful entry to the labour market, so a good quality preparation for the future career should include, besides the ever increasing demand for expert knowledge of the students, also competencies and their development.

When considering the development of competencies as part of the university studies, we can identify two ways of acquiring them – implicit and explicit. The very type and organisation of the studies can enhance the students´ competencies without much of the teachers deliberate action – „merely" by completing the students´ duties (implicit development of competencies). This way of development of desirable competencies, ie. through the standard University teaching process, is described, for example, by Cabrera et al. (2001). It is less common to see universities to allow targeted, explicit development of the needed competencies. The reason for this is often the great deal of expertise and disciplines that the students must learn during their studies.

The competencies can be developed explicitly in two basic ways. The first one is to focus on a given competency and its behavioural manifestations. The students then gradually improve these manifestations through various processes and methods (eg. presentation skills, communication skills, interviewing skills etc.) In this case, we form a „solution" when the students acquired specific procedures for a given competency. The second option is to improve

the ability to think about one's own approach and behaviour in various situations and to develop self-reflection through strengthening metacognitive strategies. This way we provide a certain algorithm to the students, which they can use across various areas, ie. We form an independent „problem solver" and we develop him/her in the metacognitive area.


## METHODS FOR TARGETED DEVELOPMENT OF METACOGNITIVE COMPETENCIES OF UNIVERSITY STUDENTS

Metacognition is understood as an ability to monitor and evaluate procedures used by a person when processing information from the outside, when working on a task or when learning. Thanks to metacognition we can collect reflections from various stimulating situations and apply them to situation that was not in the focus of the learning (Krykorková, 2004). If we want the output of competency development in the tertiary education to be selfregulation (the ability to control one´s own learning processes), we need to lead students to metacognition which is often regarded as a concept which is superior to self-regulation (Foltýnová 2009).

The inclusion of targeted development of competencies directly into curricula of individual study programmes is still a long way away. However, minor changes can come „from under", ie. from the various activities of the university departments and directly from the individual lecturers. Their awareness of the need for developed and cultivated competencies of fresh graduates, together with flexible reaction to this need can be a great help for the students at the time of their graduation and transition to the labour market.

Privately owned NEWTON College in Brno (with a branch office in Prague, Czech Republic) designed the study of managerial disciplines in a way that emphasises not only the acquisition of knowledge, but also the development of competencies with the aim of helping its students to succeed in today's dynamically changing times. Our project titled „Metacognitive Abilities of University Students and the Possibilities of Their Development" which takes place as part of scientific activities of the NEWTON College´s Institute of Humanities, specifically aims at this area of learning. The project focuses on the identification and development of metacognitive abilities of our students. It reflects both the implicit development of these abilities, as well as the possibility of their explicit development in a way that would appropriately supplement the content aspect of university level education. The project is largely based on the principles of enrichment as defined by Reuven Feuerstein.

In terms of future success of our graduates, ie. the graduates of management study programmes, we can consider the development of personal competencies as more important than mastering the concepts and theories of management and managerial psychology (this, however, does not mean that there is not enough time devoted to the actual tuition). There are numerous methods, procedures and activities that can be used to develop the students´ competencies and their use depends mostly on the skills, focus, capabilities and goals of each teacher. We can recommend the following techniques that develop the metacognitive skills and are useful in teaching any subject: anchoring procedures used in the teaching (eg. During the teaching, we ask about the expectations of the students in relation to the subject – and we use this opportunity to explain what is the aim of learning about expectations and what are the possible uses of this concept), giving and receiving feedback, expanding the assessment Framework (reflecting on developing situations from various angles, etc.), naming, learning to become aware (using reflection to become aware of one´s own subconscious processes, naming and understanding them), bridging (looking for other areas where the acquired skills could be used), alternating the focus on the content and on the process (while focusing on the content of the instructions we stop the process of solving the given task and focus on the process – what is going on right now, what are we doing, how could it be done more effectively), asking questions and others.

## CONCLUSION

The possibility of targeted development of personal competencies in the context of University education depends on many operational and personal factors. In case of the operational aspects it depends on the possibilities of the study plan, syllabus and concept of the subject. However, the approach of the lecturer seems to be much more fundamental, his willingness to introduce new teaching methods, his will to strive not only for professional development of the students but also for the development of their competencies. From experience we can say that students welcome this approach and view it positively. It contributes not only to their greater employability after graduation, but it also helps to start the process of life-long development.

Projects like the one described above can significantly help in the development of students and potentially also in their employability on the labour market. By focusing on the metacognitive abilities of university students, the project expands the view of education and its

potential for students. A practical output of the project is going to be a draft of a special course for students that will focus directly at targeted development of their metacognitive abilities.

We assume that system changes in the area of tertiary education will require more time before it adequately reacts to the needs and requirements of the labour market. That is the reason why we try, through our activity in the area of metacognition, to achieve at least partial changes in our students.

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# Selected factors of work satisfaction of workers in the IT field

by

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The paper focuses on the relations between individual's interest type, his working environment, attachment style, and work satisfaction. 187 respondents in the field of IT professions between the ages of 20 and 39 participated in this questionnaire research. We have found significant influence of attachment safety on congruence between working type of individual and his working environment. The correspondence between the field of former education and the field of actual working position also positively influenced the satisfaction. Our results are important for the work counseling.

# Is epistemological arrangement tantamount to communication?

by

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## I. METHODOLOGY

Goal: The thesis proposed is that the arrangement belongs to what is referred to as *para-information*.

Descriptive and analytical method.

Hypothesis: The arrangement constitutes quasi-information.

Limits: It applies to theory of knowledge exclusively.

Applications: Theory of information.

## II. Key words: cognitive, science, epistemology, arrangement, communication

## III. ABSTRACT

The goal of the article is to discuss a thesis that epistemological arrangement, further abbreviated to EPI, belongs to what is known as *quasi-theory of knowledge*, i.e. a para-science, which constitutes oddity in the theory of knowledge, further referred to as *cognitive*. It will be evidenced that it is by all means a theory of heuristic relevance.

## IV. INTRODUCTION

The article addresses an extended thesis according to which EPI constitutes heuresis understood as *non-high-definition*, but instead perceived as an *introduction to theory* pertaining to all metaphysics.

The thesis proposed is that any para-cognition belongs to meta-science. Such a form of discourse bears certain features of scientific knowledge and in fact belongs to the domain of

comparative or *cognitive* methodology, i.e. purely analytical considerations. The purpose of the article is to evidence that the discourse about the cognitive status of EPI bears features of heuristic analyses and is not devoid of evaluative judgements. I have already written two publications and numerous articles (see the bibliography) on this subject.

## V. IDEAS

It was Józef Bańka who coined the notion of epistemological arrangement. It is a very significant part of cognitive methodology stemming from the lack of facts, i.e. the necessity to make up for the missing links of reality, further referred to as *epistemological arrangement*.

This kind of cognition is characterised by the following features:

- epistemological arrangement is a meta-science,
- it is a methodological act,
- it constitutes a quasi-theory,
- it is free of any axiology, hence its lack of arbitrariness, and functions in the sphere of what is referred to as *discretion,*
- it requires further refining in methodological terms.

EPI is currently *in statu nascendi*, and so it requires further methodological improvements, comments and analyses. From the perspective of science, it is an epistemologically open system.

Similarly to all other spheres of scientific methodology, its format is open in cognitive terms. And since it is also recentivistic in nature, it requires a specifically unique analysis, or definition, to be more precise.

Out of necessity, one must refer to the concept developed by Józej Bańka who introduced all the ideas in question, namely the ideas of recentivism, into science. The general theory does not obviously need to be repeated at this point; only some references to its selected themes will be made.

## VI. MAIN PRINCIPLES OF RECENTIVISM

All events take place *now* and in a specific location of *here*. The foregoing assumptions are particularly important from the perspective of EPI. Recentivism, also known as actualism,

describes events happening *now*. However, the *now* is sometimes difficult to capture due to the extremely short duration time, which is well represented in words such as "I have not noticed that". What does it mean?

Not having noticed means having overlooked. The human psyche did not register all elements. Time did not freeze. One can freeze an image in a frame, but never time. Time cannot be stopped.

A driver captured by the police three days after a specific incident will not reveal the fact of being or not being sober at the time of the incident. And that is exactly the creed of EPI.

Recognising a fact at instant t1 differs from that made at instant t2. A fact is not equivalent to a fact, contrary to what is commonly claimed.

Cognition is temporal in nature, which means it is a function of time. It is a very important, yet rarely realised observation. The fact that an event is only identical to itself at the present is not a popular view.

A driver interrogated a few days after an accident will describe it differently than at the time when it took place or when an offence was committed. Events are made of temporal fabric, which means that they are determined by time.

Recentivism is an approach which assumes that the value of truth is conditional on time. In other words, the truth becomes a function of time. Such a perspective is closely linked with epistemological arrangement.

This approach includes the view that scientific truths depend on time. For instance, if a car driver or an aircraft captain remained intoxicated when a tragedy happened, and they were apprehended four days after the accident or the catastrophe, the legal qualification of the deed differs compared to the moment of the incident.

Such is the methodological message of recentivism. It is the methodological *high-definition*, or excessive precision.

In terms of epistemological arrangement, the moment of *now* is of major importance, since it will become *history* in a matter of a moment. If event W1 takes place in time t1, then what happens in time t2 is event W2.

The question to be posed is about the relations which exist between events W2 and W1. To be more precise, one should ask if communication between these events is still maintained.

It is by far a major question in the theory of communication, and we should bear in mind that this very conference is exactly about the communication theory.

One may assume the following optional scenarios:

- all communication between events W2 and W1 is interrupted,
- there is fractal communication between events W2 and W1,
- there is complete correspondence between events W2 and W1.

The third of the foregoing situations is obviously the one to be expected, but is also rare in practice. One usually deals with the first or the second scenario. What they require of the epistemological arrangement author is some additional interpretation. However, if it is extensive, the communication between W1 and W2 is interrupted, and this very fact implies that one of the arrangements is faulty or, which is even worse, that both are failed.

In such situations, the arrangements must be revised and recreated.

There is basically no area of research which would not require the epistemological arrangement procedure to be applied. The foregoing stems from the fact that what we are in disposal of is not completed theories, which means that each theory may still be supplemented. Nevertheless, one must bear in mind that not only theories are subject to arrangement, but to the same extent it may apply to phenomena, events, states as well as everyday situations.

Very frequently, communication is interrupted on the linguistic level. It is then that one must apply what is referred to as *derivation*. No every linguistic error carries lack of communication.

One may use a linguistic principle incorrectly, and yet communication will be maintained. For instance, take the following sentence: "Come over here, and I'm gonna show ya all them failures." The foregoing sentence is incorrect as far as language standards are concerned, but it is correct in terms of communication.

A linguistic standard is fundamentally different from linguistic communication. An ideal situation is obviously encountered when both these features coincide, but this happens rarely. Linguistic standards are typically used by those proficient in the language, experts etc.

One should obviously strive after linguistic correctness, if only it is attainable. Distinguishing between a linguistic standard and communication becomes relevant when discussing what is referred to as *specialisations*, for they are predominantly concerned with linguistic communication, and not standards.

When the linguistic communication starts failing, the standard no longer suffices, and it is exactly what frequently happens in practice when the epistemological arrangement is being developed.

## CONCLUSIONS

In epistemological arrangement, linguistic communication is more important than a linguistic standard, sometimes referred to as a *style*.

It may even be the case that the style prevails over the essence, and that is when the arrangement becomes interrupted. Such scenarios should not happen.

For the sake of epistemological arrangement, the following is recommended:

-   linguistic communication must dominate every arrangement,
-   the linguistic standard must not prevail over the communication one,
-   the arrangement must rely on facts, and not on speculations,
-   the arrangement should be coherent with the reality being described,
-   the arrangement should be ideologically consistent,
-   it should be developed transparently,
-   it should escape ambivalence,
-   it should be relevant in terms of the subject matter,
-   one should allow for confrontation of arrangements.

All the above remarks are of qualitative relevance, and they represent the evident progress made in indicative or evaluative works.

Arrangements should be developed in groups, i.e. by several persons operating at the same time, for the sake of what is referred to as *objectivisation*.

Arrangement should also account for temporal aspects, since otherwise they become worthless. They must bear their recentivistic mark.

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