SOCIAL PERCEPTIONS GENERATED BY THE CONCEPT OF ADMINISTRATIVE INTELLIGENCE IN THE CONTEXT OF THE NEW TECHNOLOGIES

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Abstract: Administrative Intelligence as a novel hybrid notion featured by Government Intelligence and Business Intelligence adds to the classical intelligence cycle elements of innovation defined by cloud-computing evolution towards cognitive computing using computational techniques and artificial intelligence for analysis of Big Data structures. Today, the partial automation of existing processes at the level of the Central and Local Public Administration in Romania involves the modeling, validation, simulation and optimization of the common and specific workflows of each type of administration with the ultimate goal of eliminating human errors, subjectivism or inappropriate intentions in exercising the public administration functions. In this paper we shall evaluate the social perceptions of the fact that people will have to boost their creative skills and to give up repetitive activities that will be taken over by such automated systems. The prior understanding of such social future development is of a great value for the community cohesiveness and design of the future development objectives.

Keywords: administrative intelligence; cognitive computing

1. INTRODUCTION

The need for introduction and study of the concept of *Administrative Intelligence* (AI) is given by the criticism of the NPM (New Public Management) paradigm – the new management philosophy designed to modernize the public administration. This is based on the following elements: performance competition, privatization, standards, measurement and monitoring, focus on results, focus on customer, social control. The fact that this model is not flawless is proved by Boston *et al.* (1996) by highlighting that the missing elements such as overarching legal frameworks, vested public interest, the market and sovereignty (notably, Rosenbloom, 1993) create the divide between the public and private sectors. They trigger non-compliance with ethical standards in public life and, as a matter of consequence, greed, favoritism and conflict of interests are enshrined (Larbi, 1999). The shift to the NPM in Public Administration has also led to power differentials, understood as a concentration of power and knowledge within governments and in the exclusion of other stakeholders from the policy making process (Yuen, 2007). In Asian countries where a bureaucratic model is not in place, privatization (featuring NPM)

has become a popular source of income in relation to the distribution of corruption and patronage (Samaratunge et al., 2008), the same phenomenon taking place in the East European countries.

The concept of *Administrative Intelligence* is not totally embedded to Government Intelligence (protecting the democratic values, citizens` safety, economic security and state classified information; preventing and combating spying, terrorism and organized cross-border crime which, by their nature and scale, affect national security, promoting the security interests of Romania and its allies in a fluid geostrategic context of states, corporations and asymmetric threats.), nor in Business Intelligence (which comprises the strategies and technologies used by companies for the data analysis of business information (Dedić & Stanier, 2016).

Examining Organizational Intelligence (OI), we see that the concept of AI overlaps OI but applied to Public Administration. The concept of *AI* will bridge the existing gap between the development of Organizational Intelligence using Business Intelligence tools and techniques and the missing elements identified above. These give rise to the following symptoms in Public Administrations, according to Veryard (2013):

• *Choke*: inability to capitalize on expertise.

• *Denial*: refusal to accept the reality that we are already facing.

• *Guesswork*: intuition-driven action rather than focused readiness.

• *Meddle:* attempt to change a state of affairs that is not under our control or responsibility.

• *Muddle:* confusion due to many overlapping and conflicting situations.

• *Panic:* unreasonable thoughts or behaviour.

• *Policy-based evidence:* decision-making is based on a selection of data while removing any contradictory data.

• *Repetition / Oscillation:* no lessons of the past are learnt so as to avoid making the same mistakes.

• *Short-Sighted / Tunnel Vision:* strategic long-term orientation is not developed.

2. FRAMING ADMINISTRATIVE INTELLIGENCE

2.1 The Importance of Knowledge Management for Public Administration. Knowledge has always been considered a valuable resource for public and private organizations, a prerequisite for achieving goals, and a timely response to changes in the political, social and economic environment. It was recognized as an intangible asset during the last two decades of the 20th century and widely acknowledged as the top ranking factor of production in the era of the "New economy", tools and methodologies becoming available and shared for development purposes.

The concept of Knowledge Management is a later addition, still controversial and lacking a unitary definition or application (Despres& Chauvel, 1999). Nonaka and Takeuchi (1995) envisage Knowledge Management as the capability of an organization to create, disseminate and integrate it its products, services and systems. In the same climate of opinion, Skyrme & Amidon (1997) define knowledge management by focusing on its explicit and systematic nature and on the cycle of its "creation, gathering, organizing, diffusion, use and exploitation" for the accomplishment of collective goals. Wiig (1997) demonstrates convergent thinking with the above mentioned authors, and associates renewal with Knowledge Management as a complex strategy of optimization, value creation and return on investment. OECD (2003) provides an all-inclusive definition of knowledge management:

a broad collection of organizational practices related to generating, capturing, and disseminating know-how and promoting knowledge sharing within an organization, and with the outside world.

Sutton (2007) also claims that scholars and practitioners alike have not yet been able to define the phenomenon of Knowledge Management in a sustainable way so as to clearly identify its multilayered meaning and components. Jennex (2009) advocates that Knowledge Management boils down to leveraging, by the optimal exploitation of knowledge assets and connecting all the stakeholders: knowledge generators, holders, and (end) users, thus securing the flow of knowledge internally. Bali et al. (2009) also dwell on effectiveness and efficiency in shaping Knowledge Management, and share their concern with authenticity and relevance of data supporting superior decision-making and sustainable competitive advantage. McElroy (2010) expands Knowledge Management to innovation management and organizational learning. Despres (2011) raises the question of no definitive theory of Knowledge Management, considering it an open system. In our attempt to harmonize all these views, we can conclude that Knowledge Management is an evolving multilayered concept covering the creation, collection, systematization, sharing, dissemination and storage of knowledge for problem solving and decision making along with the evolution of the governance.

2.2 From Organizational Intelligence to Administrative Intelligence. The first approach to the concept Organizational Intelligence is attributed to McMaster (1998) who endorses that OI is the capacity to think and act at the organizational level, while allowing for flexibility, creativity and accommodation strategies. Similarly, Tarapanoff (2002) sees OI as resulting from the need of the organization to continuously and quickly adapt to environmental changes, accurately dealing with opportunities and threats, and showing the ability to innovate. Therefore, OI refers to a process of converting data into knowledge and knowledge into action so as to secure corporate gain (Cronquist, 2010). We favour the broad definition of OI put forward by De Angelis (2013) as the ability of an organization to adapt, learn and change in response to environmental conditions via the exploitation of relevant knowledge.

The first definitions of the *Administrative Intelligence* (AI) pertain to Choo (1998) and

Tsoukas (2005), being equated to the intelligence of public organizations in the form of a distributed knowledge system or sense-making community. This theoretical view holds that the knowledge resources which a public-sector institution deploys are neither given nor discovered, but created in the process of making sense of the knowledge. This comes very close to what Nonaka and Takeuchi (1995) describe as a process during which tacit knowledge is converted into explicit knowledge within the structures of a given organization. As knowledge becomes an asset in terms of organizational competitiveness, mechanisms of learning, unlearning and competence building become incalculably valuable features.

Virtanen and Stenvall (2014), for instance, argue that the AI encompasses two dimensions – knowledge-based decision-making (including the constructionist way to build performance systems, management and metrics) and customer-centered thinking emphasizing the role of service-dominant logic in organizing public-service delivery. This perspective underpins that an intelligent public organization – and public policy-making as well – develops consolidated knowledge-management systems which take the whole planning process into account – from strategy to implementation and from implementation to the evaluation of effects of public interventions.

We would like to emphasize that public-service delivery has developed qualitatively during the last 10 – 15 years or so – and now there is an urgent need to identify new directions of performance management and evaluation. More exactly, the new planning ideology has been built upon the New Public Administration (NPM) principles; management conveys the idea that society, public policies and organizations cannot be governed without the capacity of managing networks and co-operation (e.g., Greve, 2015). These networks exist at all levels of governance – that is, at the local, regional, national and global levels. Consequently, the time-frame logic of planning has also changed radically. Planning cycles are now shorter, and this calls for a new kind of reflexivity, in terms of both the agility of the public organizations and their performance systems.

2.3. AI as a dimension of Knowledge Management. The concept of AI is interconnected with the concept of Knowledge Management as indicated by Mooghali & Azizi (2008) and Yaghoubi et al. (2011) who claim that 59.2% of the changes of AI are determined by the strategic processes of Knowledge Management. Zarbakhsh

et al. (2011) counterargue that although research and diagnostic works have been using Albrecht organizational intelligence tests, no adequate measures have been taken to standardize them. Liebowitz (2001) insists that that the active management of knowledge is of paramount importance in problem solving, decision-making enhancing performance in the case of public organisations.

Cruz and Dominguez (2007) strongly believe that AI is enabled by Knowledge Management as serving to gather external and internal information, and facilitating perception, knowledge creation and decision-making. Lefter et al. (2008) state that intelligent organizations use knowledge management as an adaptive coping tool within a continuously changing environment – hence, early identification of opportunities and risk avoidance are possible. It is obvious that Knowledge Management provides the toolkit for the identification, collection, storage, dissemination, and creation of knowledge, whereas AI interprets and integrates and these inputs to enable decision making. However, Choo (2009) warns us against the fact that too much information can impinge on AI processes. The idea of developing and implementing appropriate copying strategies in the private sector in terms of Knowledge Management/ Organizational Intelligence is assimilated to adopting a proactive stance, but it presents several pitfalls as suggested by Boston *et al.* (1996).

2.4. From GOV2.0 to GOV3.0 through cultural changes. The move on from WEB 1.0 to WEB 2.0 and WEB 3.0 has meant passing from Hierarchically oriented governance (WEB 1.0) to Market-oriented governance (WEB 2.0) and currently to Network-oriented governance (WEB 3.0). As a matter of fact, we have witnessed the shift from a "Gov-to-You" to a "Gov-with-You" framework to incentivize the co-creation of knowledge as enabling AI, while highlighting the following:

1. building up and promotion of a sharing culture of the public administration;

2. facilitating a concise expression of citizens through public platforms and portals;

3. engaging technology and specialists to turn Knowledge Management into AI.

The public value will be provided not by the government alone, but mainly by collaboration because the scarcity of resources, in-house skills, and intelligence to meet the needs of citizens in a dynamic environment and the Network-oriented governance This 21-th AI will be based on sharing

power, opening up the policy- and decision-making process, shaping new relationships, and partnering on service delivery.

As the world becomes more unpredictable and more complex, the model of AI is based mainly on changing cultural patterns in the Public Administration field, i.e., from the interaction "people to documents" to "person to person approach" fully exploiting social and communication skills.

This important cultural change is the main element of the AI model acting as a driving force, as pointed out by Riege and Lindsay (2006) with reference to corporate communication and culture. The biggest challenge faced by the public administration, employing permanent staff, with a strict organization chart and having to comply with directives come from numerous management bodies, is to be able to do away with the "Knowledge is power" mindset in favour of "Knowledge sharing is power."

Culture change is an ongoing process, underlying (notably, De Angelis, 2013):

1. willingness to cooperate;

2. understanding of how AI improve the public processes in conjunction with e-Gov implementation;

3. implementation of a network of CIO;

4. performance indicators for AI and for public services delivery;

5. the extent to which public policies impact on AI implementation;

6. introducing local and regional collaboration networks between public and private organizations;

7. meritocracy policy in the assessment of civil servants;

8. development of intercultural competence along with specific competences in lifelong learning;

9. creative thinking, fair-mindedness, broad-mindedness, and open-mindedness;

10. addressing integrative problems from workflows to cognitive computing;

11. understanding the passing from social media to public engagement;

12. turning transactional leaders into transformational leaders.

3. A PROPOSAL MODEL FOR AI

3.1. AI model based on New Cognitive Technologies. The OI model based on Falletta's Organizational Intelligence Model (2008) was created using Traditional Approach based on

structured data, analytical functions and logical architecture with respect to "Circle of Trust" where data stays closer to warehouse and analytics.

The 2013 model of De Angelis is based on Halal model (1998) in which "Stakeholders relationship" is replaced by "Learning with environment". The criticism we bring to the De Angelis model is related to the lack of dual interaction between the IT Component and the Strategy-Planning component, between the IT component and the Organizational Structure component. Also, the link between the IT Component and the policy and best practices component is not achieved directly. It is obvious that all these links must have a systemic direct link with the feedback measurement. Also, filtering the policy component and best practices through the learning component completely eliminates the feedback on the application of both policies and good practices on other levels than those of learning.

We propose a model based on creativity, holistic thinking and intuition where all data is unstructured, intimate, coming from social networks, mobile, GPS, web, photos, audios, video, email, logs. We integrate these new data sources with Governmental Enterprise Architecture to enhance the outcomes (Fig. 1).
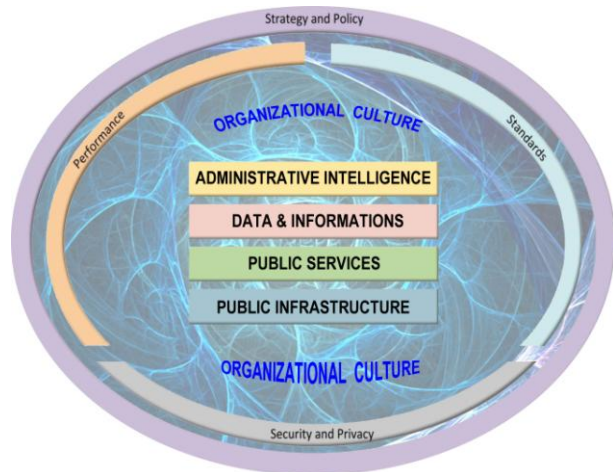

Fig.1 AI Cognitive Model

In order to maintain the AI cycle, in the Big Data environment, the excess of information can befuddle the AI processes, but the data collectors are exponentially increasing. To solve this gap, new technologies were developed. Main directions of data analysis consist of passing from Machine Learning to Artificial Intelligence and Cognitive Computing. Machine Learning defines the technology by which a computational system has the ability to modify subroutines from the learning

algorithm through the learning process from the available data to create predictions about the evolution of these data (Fig. 2).
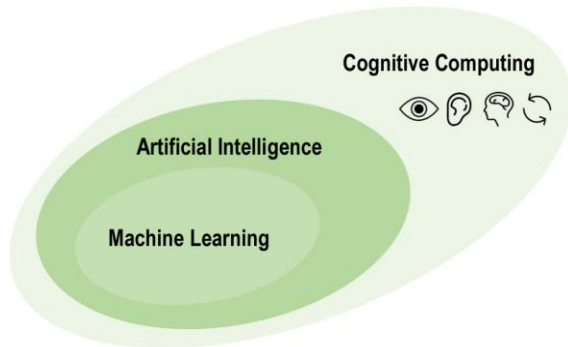

Fig.2 Cognitive Computing Model

Artificial Intelligence defines the technology by which a computerized system or automated system takes one or more decisions based on data, algorithms and machine learning available. This technology can make a decision based on an alert and estimate at a critical time or provide a set of decisions for a given problem, each of which can have a certain score relative to a particular measurement indicator system. State of the Art in Artificial Intelligence is Intelligent Agent, specific to the new WEB 4.0. Wooldridge and Jennings (1995, pp. 203-218) consider intelligent agents can perceive environmental conditions and respond quickly to changes in order to meet the goals for which it was built, are able to show objective behavior and have the ability to take initiatives to meet their design goals. Through their social capacity - to interact with other agents and possibly people in order to meet the goals for which they were designed - intelligent agents shape social behavior by creating a data collection system and learning machines based on ETLs on quantifying human social perceptions and creating associated measurement metrics applicable to the internal and external social network environment in public administration.

The natural pursuit is Cognitive Computing technology based on intelligent intelligence systems, learning machines, data mining, extracting, transforming, collecting and developing tools in two directions: computer-based data exploitation, visual recognition and natural language processing and on the direction of cognitive sciences by developing tools for measuring and shaping human behavior at a biological and social level.

The challenge for a new model of AI for the Public Administration, is to change the paradigm,

meaning to deliver public, electronic services with an increased usability and accessibility for the citizen, together with the facilitation of social perceptions at the level of public servants that will facilitate the identification, documentation, decomposition and compliance of these public services both with the public policies generated by GOV 3.0 and with the new technologies (Fig. 3).
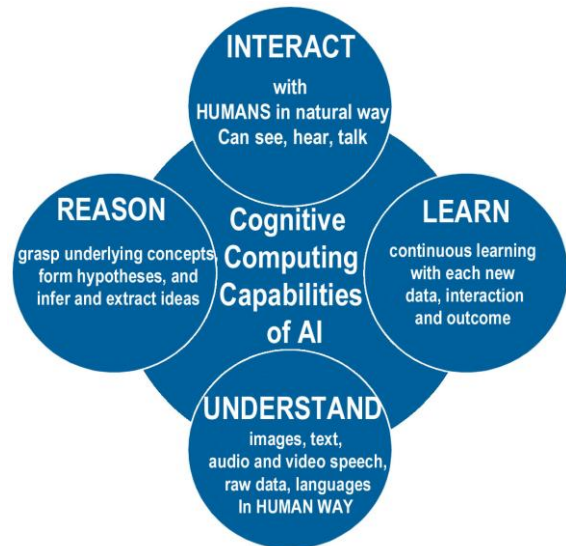

Fig.3 Cognitive Capabilities of AI Model

This is why, together with the understanding of the new technology itself, it is necessary to change the social behaviour within the social networks created inside and outside the Public Administration, and the change of the social behaviour is the result of the social perceptions that both public servants and citizens have through their interactions with both the final interfaces of the new technologies as well as within the above-mentioned social networks.

3.2. Social perceptions associated with the new model AI. Dijksterhuis and Bargh (2003) show how social perception automatically leads to adequate social behaviour, perceptual representations automatically activating behavioral representations. We shall not analyze here the case of observables (gestures, body position, body movements), focusing instead on the prediction of the features (intelligence, honour, professionalism) based on the social perceptions within the social networks. This prediction is not based on metrics (tests, IQ, references) but on direct perceptions within social networks.

Social perceptions equally activate social stereotypes, which are not always objective. For instance, the image of a Roma escaping from a car

will be associated with the person's belonging to the social group of individuals breaking the law.

The role of social perception in building a viable AI model is that of a catalyst for cultural change, seen as the main element of the AI model. This evolution is needed because the transition to GOV 3.0 involves moving from the "citizen-document" interaction to the "citizen-civil servant" interaction, where the competencies of the latter are decisive. Following the evolution from Gov 2.0 - open government, social media and open data - to Gov 3.0 Collaborative Innovation, Public Engagement and e-Services in Cognitive Computing, we shall become aware of the need to upgrade the notion of "civil servant" with virtual assistant for simple and repetitive actions. This perception should not lead to the rejection of these forms of Artificial Intelligence, motivated by the fear of losing the job, but by the need to further the skills of the civil servant towards meeting the demands of organizational culture changes as presented by De Angelis (2013): creative thinking, fair-mindedness, broad- mindedness, and open-mindedness (Figure 4).

Fig.4 Cognitive competencies of public servants

As far as technology is concerned, we should "guide" the social perceptions (we favour relativistic and pluralistic perspectives) so that the required new competences will allow for the deep understanding of granularity, of the need for sub-activities, triggering changes of the planning capacity, monitoring strategies and building of a culture of quality for each public authority involved. Moreover, all these should reverberate at the individual level in order to secure the intended reconfiguration of the workplace relationships, i.e. the achievement of an institutional structure in full compliance with the imported technology in each field of activity.

Hence, efficient and effective communication is a pre-requisite, and the success measure consists in the answers to the following questions: "Are we ready to socialise?" and "Have we developed the required social skills?" Most likely, the answers are positive in the case of groups that are culturally homogenous. Nevertheless, we think that the answers should also be positive in the case of the specific activities pertaining to the workflow, and the ingrained habits, routinised ways and related skills shaping cultural unity should be exploited to achieve unity of action.

4. CONCLUSIONS

Social perceptions influence both citizens and public servants, leading to behavioural modifications both at the societal level and within the Public Administration system. The abrupt shift to new WEB 3.0 specific technologies, and WEB 4.0 technologies for the next years, leads to a change of approach in what regards organizational and cognitive-computing approach. The new AI models will take into account the capabilities of the cognitive systems (UNDERSTAND, REASON, LEARN, INTERACT)

There is a necessity for reconstructing the institutional architecture of the Public Administration, based on the new Cognitive Computing concepts and the adjustment of public servants' competences to the capabilities of cognitive systems based on social perception of Cognitive Systems.

BIBLIOGRAPHY

1. Dijksterhuis, A. & Bargh, J.A. (2003). *The Perception-Behavior Expressway: Automatic Effects of Social Perception on Social Behavior,* Royal Netherlands Academy of Sciences and by Grant R01-60767 from the U.S. Public Health Service. 5-28.
2. Bali, R. K.; Wickramasinghe, N. & Lehaney, B. (2009). *Knowledge Management Primer*. New York: Routledge. 46-59.
3. Boston, J., Martin, J., Pallot, J. & Walsh, P. (1996). *Public Management: The New Zealand Model.* Auckland: Oxford University Press. 35-49.
4. Bourgon, J. (2009). Public purpose, government authority and collective power. *XIV Congreso Internacional del CLAD sobre la Reforma del Estado y de la Administración Pública*, 27–30 October. Salvador, Brazil. 5-21.

5. Choo,C.W. (1998). *The Knowing Organization: How Organizations Use Information to Construct Meaning, Create Knowledge, and Make Decisions.* Oxford: Oxford University Press. 167-245.
6. De Angelis, C.T. (2013). A Knowledge Management and Organizational Intelligence Model for Public Administration, *International Journal of Public Administration*. 36. 807–819.
7. Cruz, Y. R., & Dominguez, E. G. (2007). *The organizational intelligence: Approach needed for the information and knowledge management.* Instituto Brasileiro de Informagâo em Ciencia e Tecnologia. 36(3). 51-58.
8. Dedić, N. & Stanier, C. (2016). *Measuring the Success of Changes to Existing Business Intelligence Solutions to Improve Business Intelligence Reporting.* Lecture Notes in Business Information Processing. 268. Springer International Publishing. 225–236.
9. Despres, C. & Chauvel, D. (1999). Knowledge management(s). *Journal of Knowledge Management.* 3, 2. 110-120.
10. Edge, K. (2005). Powerful public sector knowledge management: A school district example. *Journal of Knowledge Management.* 9(6). 42-52.
11. Greve, C. (2015). Ideas in Public Management Reform for the 2010s: Digitalization, Value Creation and Involvement. *Public Organization Review*. 15(1). 49 – 65.
12. Halal, E. W. (1998). Organizational intelligence: What is it and how can managers use it. *Strategy & Business*. Fourth Quarter. 1-4.
13. Jennex, M. E. (2009). *Knowledge Management, organizational Memory, and Transfer Behaviour: Global Approaches and Advancements.* Hershey, PA: Information Science Reference. 157-218.
14. Larbi, G. A. (1999). The New Public Management Approach and Crisis. *States UNRISD Discussion Paper No. 112*, September.
15. Lefter, V., Prejmerean, M. & Vasilache, S. (2008). The dimensions of organizational intelligence in Romanian companies. A human capital perspective. *Theoretical and Applied Economics*. 10. 39-52.
16. McMaster, M. D. (1998). *The intelligence advantage: Organizing for complexity*. Newton, MA: Butterworth-Heinemann.
17. Mooghali, A.R. & Azizi, A.R. (2008). Relation between organizational intelligence and organizational knowledge management development. *Word Applied Sciences Journal*. 4(1). 2-4.
18. Nonaka, I. & Takeuchi, H. (1995). *The Knowledge-Creating Company.* New York: Oxford University Press.
19. Organisation for Economic Cooperation and Development. (2003). Conclusions from the results of OECD survey on knowledge management practices. *OECD* [online]. URL: http://www.oecd.org/document/20/0,3746,en_2 649_37457_1946900_1_1_1_37457,00.html [Accesed in April, 2018].
20. Veryard, R. (2013) Building Organizational Intelligence. Leanpub. [online]. URL: http://leanpub.com/orgintelligence. [Accesed in April, 2018].
21. Rosenbloom, D.H. (1998), *Understanding Management, Politics and Law in the Public Sector.* New York: McGraw-Hill .
22. Sutton, M.J.D. (2007). Accepting knowledge management into the LIS fold: an interdisciplinary approach. *Library Student Journal*. 2(1). 1–9.
23. Tarapanoff, K. (2002). *Inteligência Organizacional e Competitiva.* Brasília: Editora Universidade de Brasília.
24. Tsoukas, H. (2005). *Complex Knowledge: Studies in Organizational Epistemology*. Oxford: Oxford University Press.
25. Virtanen, P. & Stenvall, J. (2014). *An intelligent public organization*. Helsinki: Tietosanoma.
26. Wiig, K. M. (2000). *Application of Knowledge Management in Public Administration.* Paper prepared for Public Administrators of City of Taipei, Taiwan. URL: http://www.krii.com/ downloads/km_in_public_admin_rev.pdf. [Accesed in April, 2018].
27. Wiig, K.M. (1997). Knowledge Management: Where Did it Come From and Where Will It Go? *Expert Systems with Applications*. 13(1). 1-14.
28. Wooldrige, M. & Jennings, N.R. (1995). Intelligent agents: Theory and practice. *The Knowledge Engineering Review Journal.* 10(2). 203-218.