# Innovativeness Through Time Management

Tero Reunanen[1,3*], Riitta Windahl[2], Hannu Vanharanta[3]

[1]Turku University of Applied Sciences, Industrial Management and Engineering,
Sepänkatu1, 20700 Turku, Finland
[2] Wiri Training Ltd, Turku, Finland
[3]Tampere University of Technology, Pori Campus,
Pohjoisranta 11 A, 28100 Pori, Finland
tero.reunanen@turkuamk.fi
riitta.windahl@wiri-training.fi
hannu.vanharanta@tut.fi

**Abstract.** As an imperative resource, time and the usage of it should be analyzed and planned in a proper way to maximize the individual effectiveness, and thus make the time management as a functioning tool. Innovativeness is not any easier issue to master, but if a time personality is understood and taken account, a person´s innovativeness can be effectively utilized. Innovativeness as a concept must be seen from a wider perspective, including both capability and willingness to act, resulting different kinds of target oriented activities in different stages of an innovation process. In this process, individual and group or network level can be separated and the meaning of a time personality for innovativeness can be analyzed to enhance an overall innovation performance of an organization. Research discussed in this paper was done by utilizing applications called Chronos & Kairos and Pursoid. Research results show that there are some very interesting combinations with conscious awareness of individuals towards time and innovativeness. There seems to be a lot individual variation where the amount of time in use is not necessarily correlated positively with the idea of high level of innovative capacity. Future research aspects and recommendations are also discussed in this paper.

**Keywords:** Proactive innovativeness · Time management · HRM development

## 1. Introduction

### 1.1. Time personality and management

"Success in knowledge economy comes to those who know themselves, their strengths, their values and how they best perform" [1]. Article handles personal skills in leadership domain and emphasizes highly self-consciousness. "Effective executives do not start with their tasks, they start with their time" points out that time is the limiting factor [2] and a unique resource that cannot be stored, is perishable, irreplaceable and has no substitute. Demand does not affect to it and it has no price or marginal utility, and in modern business environment, it is always short of supply, i.e. we are always

lacking it. [1][3]. Therefore the first task in journey to become an effective expert is to learn how to manage oneself and learn to manage one's own time usage. Possibility to measure time duration, speed and numerical order with clocks [4], is not near enough to manage it or even understand it. Before understanding and managing time person should have conscious awareness of his or her time personality [5].

Time has two faces, subjective time and objective time. [6] Objective, or chronological time is time where business and management is done, and subjective time is where leadership and human actions are made [5] Cf. for Czarniawska [7] for history of Chronos (chronological) and Kairos (human time) two ancient Greeks gods for time. As chronological, objective, time is easy to synchronize with clocks, subjective time is relativistic and the speed of it is dependent of many factors. Personal way to utilize and sequence time, feeling, [6], cultural background [8], situation, time pressure [9], sleep deprivation [9] [10], personal traits [11] and planning personality [12] are all issues which bias experienced time from objective time [5].

Most of us have experienced a lost tracking of time i.e. feeling of timelessness [14], when time flies. Extreme case of this is called to flow a phenomenon of complete focus and motivation. [14] On the other hand, everybody has experienced feelings when doing something unpleasant or boring, time nearly stops. Satisfying situation makes feeling towards time positive [6]. Hectic situation may cause willingness to compress every moment of the day with very intensive activities and try to get to the essence of things. If this continues too long, balance of life will suffer. [3] Compressive mindset might end up to "implying that rational reduction of information, emotions and alternatives is necessary to reach organizational and individual goals." and leads to a situation where quality, creativity, open-mindedness, innovativeness and empathy are reduced. [15] This compression of time is heavily against Drucker´s [2] suggestion, where people "have to feel that we have all the time in the world". Studies show that if balance s not found between personal life and work, organization may start to lose their workers as that balance has been found to be the most or the second most important attribute of the job [16]. Possibility for self-development is also a factor what makes time as positive thing [6]. It´s also found that when a person does not receive enough time for rest and sleep, it may lower his or her self-control and unethical behavior will be more probable [10]. Sleep-deprivation seems to harm time-pressured activities [9]. Personal traits are also key issues in biased time personality [5]. These traits are perfectionist, preemptive, people pleaser and procrastinator [11] and especially if added with insufficient delegating skills [17] and too optimistic future orientation [12], whereas tendency for long term vision reduces biases when compared to short term visioning [6].

Before mastering concept or managing time, it must be recognized that time cannot be either accepted or denied; own systematic ways should be found to become aware of one's own time and its use, own thoughts and ideas of time expressed and comparisons and analyzes of one's own thinking regarding time should be done with other methods and thinking processes [18] i.e. consolidating it to bigger sections [1] and parts of own life. Time usage on the other hand cannot be mastered if boss, system, peers, or followers use all time available [17]. Time usage is also divided by locations or work style [20], by with whom time is spent [19] [3] or how big portions work is done [21]. Despite of division system it still should be kept in mind that time is a limiting factor in all activity - not tasks themselves.

## 1.2. Innovativeness

"Innovation" in its wider and general meaning can be defined as the processes where new ideas are implemented within an organization. Thus, innovation is an establishment of new concepts, procedures or technologies in an organization. By nature, innovation processes are commonly non-linear and require accordingly flexible and adaptive tools. In an innovative evolutionary process, it is a question about changing ideas into technological, social, and institutional assumptions that blend in with normal practice, processes or products [22]. Much concern has been expressed about physical infrastructure related to research and development (R&D) activities at organizations, as if there was some positive correlation between physical resources allocated to R&D activities and a successful outcome as a result. Though, more and more attention has recently been paid to other factors, so called innovation drivers that might function as an innovative stimulant for any R&D system. In this system the mental facilities are also taken account as at least as essential elements as the physical ones. For example, a right kind of state of mind together with positive attitude towards innovativeness and personal time management skills can be such essential elements [23].

Nonaka and Konno talk about "ba" as a shared space or platform where different elements of innovative activity - physical, mental, virtual or any combination of them - can be refined for an innovative outcome [24]. From the innovation management point of view, both the composition and coordination of such platforms constitute a critical framework for any innovative project. Thus, resource allocation or attention to physical infrastructure alone does not guarantee the positive outcome sought after.

At least part of all innovative activities is innovating human systems and the mental models, paying attention, for example, to human beings as the very basic building material of any organization. Such mental models should be built by using a bottom-up philosophy, according to which an organization culture and a management philosophy permit and encourage idea generation among employees, as well as freedom to bring some experiments into effect without a fear [25]. Though, a top-down philosophy is also needed to steer and control the whole system in a goal oriented manner. Plain bottom-up philosophy might lead to pure anarchy and uncontrollable chaos in the innovative process, while plain top-down philosophy might suppress innovativeness and restrain motivation in general. In most creative activities it is mainly question about creating favorable circumstances in general, and for a situation at hand in specific [23].

Latour approaches the innovativeness and innovative networks especially from the artifact's perspective and questions the relevance of dividing the elements into human and non-human items [26]. In his Actor-Network Theory (ANT) he equalizes all the elements, players and systems within any innovative network, and takes account all the items as critical ones which can ruin or save the result or outcome, making no division into human or other-than-human factors. However, the consciousness of these different elements or factors related to both physical and mental facilities in any innovative activity might help a lot to tackle the possible setbacks looming while some innovative solutions are needed.

It is obvious that in any innovative activity some human systems and mental models are more or less involved, and ignoring these systems and models can cause a failure. Thus a lot of attention must be paid to the structure and functioning of management

strategy and organization culture in general, and innovation management in special to steer and manage these innovative activities.

## 2.    Research setting

The main approach and mind set for this study is Evolute approach by, applying ontology engineering, precisiation of meaning, and usage of soft-computing methods and fuzzy logic in order to found out what is and how to cope with uncertainty and imprecision in human knowledge inputs [32]. The aim of the research was to find out what kinds of similarities there are between person's time personality and innovativeness. Research was executed by utilizing applications called Chronos & Kairos [30] and Pursoid [31]. The main purpose of Chronos & Kairos application is to reveal individual conscious awareness of time and to give a possibility for analyzing differences in individual time experiences, whereas Pursoid is developed for analyzing conscious awareness concerning individual innovation capabilities and competences. Both application statements are formed so that they will give a comparable picture regarding respondent´s current situation, target situation and creative tension, i.e. proactive vision of different features and competences. Respondents answered for statements so that they chose level from analogy answering scale from two points of views, current situation and target situation, expected future level. Scales for answers were e.g. never, sometimes, usually and always but there were no steps, such as in Likert scale, so the selection is done analogically and freely.

Chronos & Kairos is constructed so that it includes different (n=24) features and categories (n=9) under these six main points. These categories are divided under two main classifications: 1) managing time and 2) experiencing time. Features of the Chronos & Kairos can be seen in figure 1 below. Pursoid consists (n=36) individual features called competences, which are grouped to different (n=9) sub-groups and two main groups: 1) personal competences and 2) social competences. Competences are illustrated in figure 2 below.

All answers for statements were handled as decimal number variables valued between 0 and 1. Respondent's linguistic answers were formed to numbers by fuzzy logic. Fuzzy logic is used in order to process linguistic data in computational, numerical ways. Fuzzy sets are ways to represent vagueness in linguistics [27]. These systems possess powerful reasoning capabilities. Fuzzy logic is used in the application to handle the imprecise information which is the nature of information in the human decision-making processes. There is also natural fuzziness in the evaluation processes of individuals [28]. Fuzzy logic controllers usually consist of four modules: fuzzification, interface, rulebase and defuzzification [29].

### 1.1.    Data in the research

Research data collection was executed in 2014 – 2015 and consisted of 135 individual respondents answering both research applications. Respondents were students from Turku University of Applied Sciences. Students were mostly from engineering and business degree programmes and represented full time students and part time (working adult) students. Age variety was 18-55 and arithmetic average settled to 25,6 years

when 2 of respondents didn´t want to reveal their ages. Both genders were presented quite equally. From 135 respondents 31 answered female and 37 answered male and 67 left this question blank. Respondents´ work experience varied from 0 years (19 persons) to over 20 years (10 persons) and average was 5,2 years. One respondent left this question unanswered. Respondents´ nationality was mostly Finnish. From 135 respondents there were Czech, French, German and South Korean one per each, Austrian, Chinese, Spanish two from each, 3 remained unclear and rest were Finns.

Respondents answered to 167 statements in Chronos & Kairos in a way to reveal their present feeling (current status) and future target feeling (status) to each given statement, and 173 statements in Pursoid with similar current and target status point of view. Research was made by utilizing Co-Evolute research tool Evolute. Every respondent´s every answer for every statement in both applications was integrated to every other respondents answers in three different cases: current status, target status and creative tension i.e. proactive vision. Creative tension is difference between target status and current status and therefore points out respondent´s magnitude and direction for development need. Creative tension was calculated by subtracting current status variable from target status variable. Research data was consisting of 135 respondents´ 168 answers in Chronos & Kairos application and 173 answers in Pursoid application and all statements were answered twice, once for current and once for target status. All together research data mass consisted 92 070 variables as shown in equation 1 below here, where x is number of variables and n is number of respondents.

$$x = 2 \cdot n \cdot (168+173) \tag{1}$$

## 1.2. Results from study

Figure 1 below is illustrating research results from time personality and management application Chronos & Kairos and figure 2 is showing results from Pursoid application which reveals innovation competences and capabilities. As seen from the figures, both applications have similar way to represent results of research. These figures are showing features' and competences' relative order to each other considering creative tension i.e. proactive vision i.e. difference between target status and current status. Therefore from figures 1 and 2 it is possible to see which respondents´ main developing needs are. Features and competences are arranged so that in the top of the figure there are issues which should be added most and in the bottom of the figure there are issues which should be lessened most. Figures also show how far from the neutral axis respondents see that they are. This is indicated in the bottom of the figures by showing the decimal number between 0 and 1.

It could also be seen from the figures NN and NM that in Chronos & Kairos there are features which could be understood to be more negative than positive and these features are, most cases, needed to be lessened. On the other hand, in Pursoid all competences are positive and hence are something to be strengthened. This could be seen when comparing direction of creative tension and proactive vision from the figures.
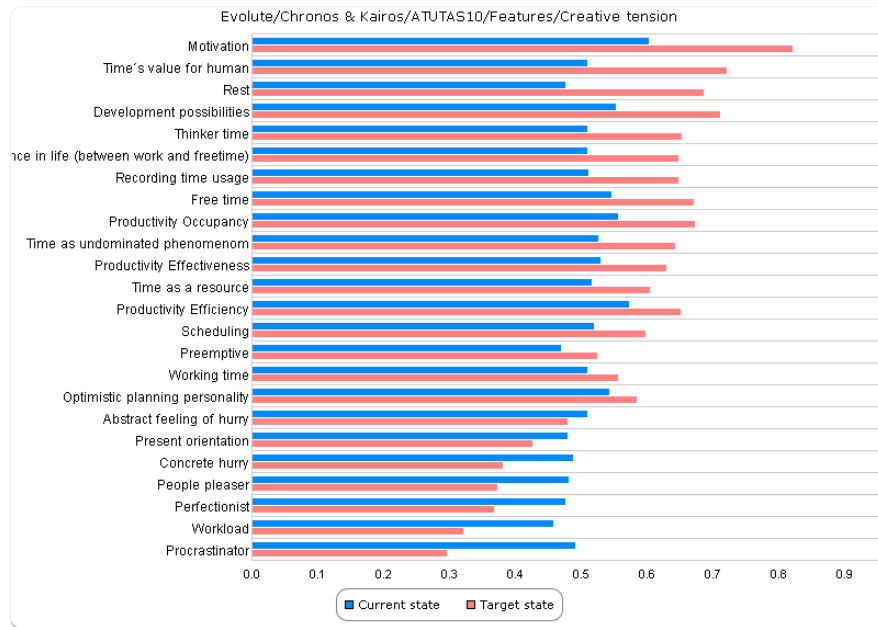
**Figure 1.** Results of Creative tension from Chronos & Kairos.

As seen from figure 1, respondents feel that their top 5 development needs in understanding and managing time are: 1) Motivation, 2) Time´s value for human, 3) Rest, 4) Development possibilities and 5) Thinker time. These five features respondents feel that they should add most. When taking into consideration that sixth feature in this list is balance in life (between work and free time) it creates to our mind picture of people that are in a hurry, and somehow overwhelmed in their tasks. Quite large gap between current status and target status in motivation, rest and balance are indicating stressful situation and need for understanding for time´s value supported with need for more thinker time (own peaceful time for thinking) are indicating that respondents are also understanding what is missing. Hunger for development possibilities is also quite understandable for students. They feel that they want to learn how to cope with these situations better.

When looking the most needed features to lessen we found 1) procrastinator, 2) workload, 3) perfectionist, 4) people pleaser and 5) concrete hurry from the figure 1. These indicate quite well that respondents are looking for at reasons for this situation from themselves and actual amount of work. Procrastinator, perfectionist and people pleaser are all traits that cause quite much problems in personal time management. [11][5] Workload and concrete hurry are indicating that respondents really feel that they have to lessen their workload and hurry. As abstract feeling of hurry is not as needed to lessen, it shows that respondents know where this hurry comes from.

On the other hand when scrutinizing results by looking which features are highest or lowest in current level we find that top five is: 1) Motivation, 2) productivity efficiency, 3) productivity occupancy 4) development possibilities and 5) free time. This indicates that respondents are motivated, even that they want more motivation, and they have

development possibilities, they feel that they are efficient and are able to work in reasonable batches and they have enough free time. When looking last five features from the current situation we find 1) workload, 2) preemptive, 3) rest 4) perfectionist and 5) present orientation. This means that respondents are mostly coping with their workload - though they want to lessen it, they don't have enough rest and they are feeling bit too preemptive or perfectionist.
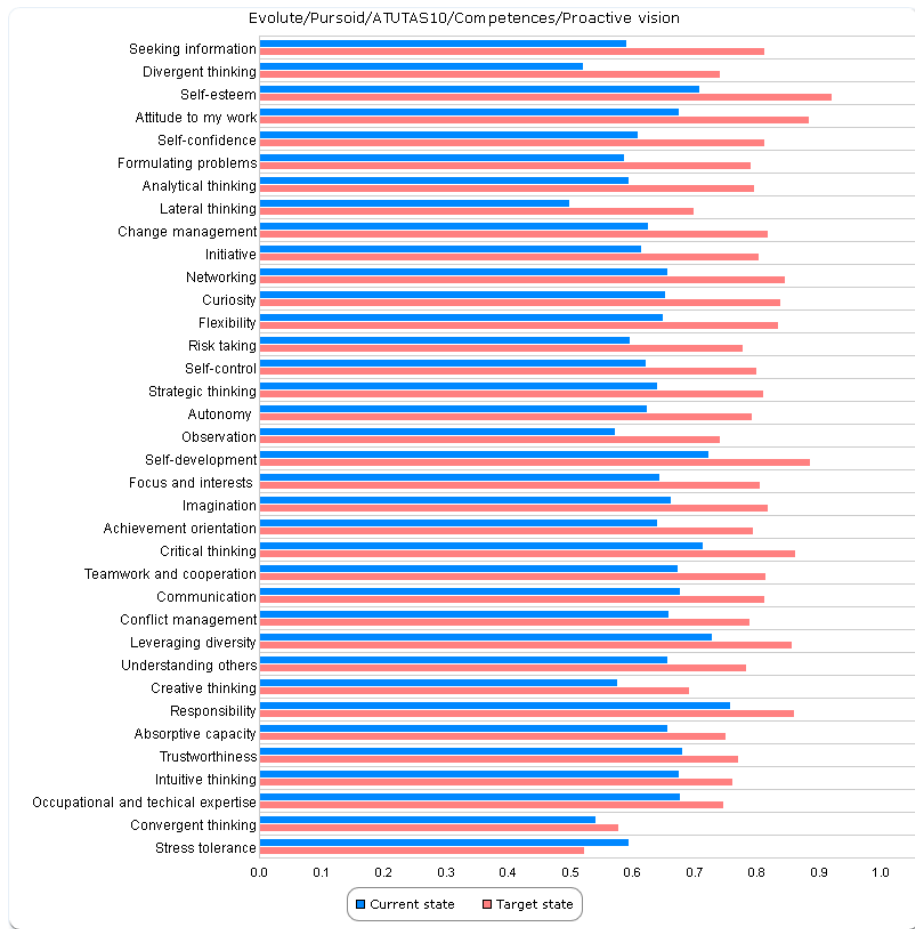


**Figure 2.** Results of Proactive vision from Pursoid.

The top five innovation competences which are seen to be strengthened by respondents are: 1) seeking information, 2) divergent thinking, 3) self-esteem, 4) attitude to my work, and 5) self-confidence.

The least needed top five competences are: 1) stress tolerance, 2) convergent thinking, 3) occupational and technical expertise, 4) intuitive thinking and 5) trustworthiness. In these areas of innovative competence the respondents ranked themselves quite equal with the requirements set for them at their future work.

When looking at the top five competences from current status from innovation competences, they are 1) responsibility, 2) leveraging diversity, 3) self-development, 4) critical thinking and 5) self-esteem. It can be seen that respondents felt somewhat strong in these areas, but on the other hand, self-esteem and self-development were also seen among biggest personal development areas, telling apparently their importance for respondents. Lateral thinking, divergent thinking, convergent thinking, observation and creative thinking were respectively weakest competences of respondents. This might at least partly indicate the status of respondents - as students they probably do not have so much idea or experience of different kinds of thinking and observation skills needed in their future work.

### 1.3. Comparison of results

Since there is difference between applications regarding issues in these two research sets, there are no negative competences which should be lessened according to that data alone. Comparison is made so that table 1 consists of five features which should be most enhanced and five features which should be most lessened from Chronos & Kairos and ten competences which need most development from Pursoid.

When looking intuitively comparison between time management´s and innovation competences´ proactive vision it can be seen that hurry and workload have connection to innovation competences development also. Information seeking development need may be probably highlighted also because respondents were students.

**Table 1.** Comparison between proactive vision.

|  | Chronos & Kairos / Time management | Pursoid / Innovation Competences |
|---|---|---|
| Top 5 in both | Motivation | Seeking information |
| Top 5 in both | Time´s value for human | Divergent thinking |
| Top 5 in both | Rest | Self-Esteem |
| Top 5 in both | Development possibilities | Attitude my work |
| Top 5 in both | Thinker time | Self-Confidence |
| Last 5 / Top 10 | Concrete hurry | Formulating problems |
| Last 5 / Top 10 | People pleasing | Analytical thinking |
| Last 5 / Top 10 | Perfectionism | Lateral thinking |
| Last 5 / Top 10 | Workload | Change management |
| Last 5 / Top 10 | Procrastinating | Initiative |

Table 1 is set just for demonstration purposes only. Direct comparison should not be made between features and competences.

## 3.     Conclusions

Time and innovation management are not easy to master. Both are situational and both need intentional development and continuous work in order to advance towards mastery.

It seems that there is a lot of correlation between time and innovation management. E.g. decisions are moving from long term to short term in hurry, thinking time is lessened and personal trait are moving to front.

In order to find out what features and competences correlate to each other or are in some relation with each other, further analysis and future research should be done with statistical analysis. Main questions which rose during this research were: Which statements are correlating between Chronos & Kairos and Pursoid applications? Do the respondents who possess similar time personality possess similar innovation competences also? What are the main characters of these?

From the innovation management point of view it is important to know your team and their competences, as well as the way the individuals self see their skills and their possibilities for development.  With right kind of tools and encouragement these individual processes can better be managed and steered.

## References

1.  Drucker, P. F.: Managing oneself. Harvard Business Review. January (2005)
2.  Drucker, P. F.: The effective executive. Harper & Row, New York (1967)
3.  Turnbull, S.: Perceptions and experience of time-space compression and acceleration. Journal of Managerial Psychology. vol 19. no.8 pp. 809--824 (2004)
4.  Sorli, A Time as a stream of change. Journal of Theoretics. vol. 4-6 (2002)
5.  Reunanen T.: Human Factor in Time Management. Procedia Manufacturing vol. 3, pp. 709--716. Elsevier (2015)
6.  Harung, H.S.: Reflections. Improved time management through human development: achieving most with least expenditure of time. Journal of Managerial Psychology. vol. 13, no. 5/6. pp. 406-4-28 (1998)
7.  Czarniawska, B.: On time, space and actions nets. Organization. vol. 11, pp. 773―791 (2004)
8.  Lewis, R.: When cultures collide. 3rd. edition. WS Bookwell, Finland (2010)
9.  Kobbeltvedt, T., Brun, W., Laberg, J.C.: Cognitive processes in planning and judgements under sleep deprivation and time pressure. Organizational Behavior and Human Decision Processes. vol. 98, pp. 1--14 (2005)
10. Barnes, C.M., Schaubroek, J., Huth, M., Ghumman, S.: Lack of sleep and unethical conduct. Organizational Behavior and Human Decision Processes. vol. 115, pp. 169-180 (2011)
11. Berglas, S.: Chronic time abuse. Harvard Business Review. June pp. 90--97 (2004
12. Buehler, R., Griffin, D. Planning, personality, and prediction: The role of future focus in optimistic time predictions. Organizational Behavior and Human Decision Processes. vol. 92, pp. 80--90 (2003)
13. Mainemelis, C.: When the muse takes it all: a model for the experience timelessness in organizations. Academy of Organizational Review. vol.26, no.4, pp. 548--565 (2001)

14. Csikszentmihalyi, M.: Beyond boredom and anxiety. Jossey-Bass. San Francisco (2000)
15. Sabelis, I.: Hidden causes for unknown losses: time compression management. In Whipp, R., Adam, B., Sabelis, I. (Eds.) Making time. Oxford University Press, Oxford (2002)
16. Johnson, J.: Flexible working: changing the manager's role. Management Decision. vol 24, no.6, pp. 721--737 (2004)
17. Oncken, W., Jr., Wass, D.L.: Management time: Who's got the monkey? Harvard Business Review. November-December (1999)
18. Jönsson, B.: 10 Ajatusta ajasta. (10 Thoughts about time) Karisto Oy, Hämeenlinna (2000)
19. Bandiera, O., Guiso, L., Prat, A., Sadun, R.: What do CEOs do? EUI Working paper ECO2011/06. European University Institute. Florence. (2011)
20. Oshagbemi, T.: Management development and managers' use of their time. Journal of Management Development. vol. 14, no. 8, pp. 19--34 (1995)
21. Tengblad, S.: Time and space in managerial work. Scandinavian Journal of Management. vol.18, pp. 543--565 (2002)
22. Valtanen, J., Windahl R., Reunanen, T.: Innovation Policy Explored Using Evolutionary Concepts - Case Finnish Maritime Industry. Conference Proceedings, ICEER (2013)
23. Reunanen, T., Valtanen, J., Windahl, R.: Evolutionary Approach to Product Development Projects. Conference Proceedings, Izmir (2013)
24. Nonaka, I., Konno, N.: The Concept, of "Ba"; Building a Foundation for Knowledge Creation. California Management Review, vol. 40, no. 3, pp. 40--54, (1998)
25. Bhardwaj, G.: Changing Mental Models to Make Innovations Work. Innovation Management, no. 2, pp. 64--65 (2011)
26. Latour, B.: The Social Study of Information and Communication Study, ed. Avgerou, Ciborra & Land. Oxford University Press, Oxford pp. 62--76 (2004)
27. Lin, C. T., Lee, C. S. G.: Neural Fuzzy Systems - A Neuro-Fuzzy Synergism to Intelligent Systems, Prentice-Hall, Inc. (1996)
28. Kantola, J., Nurminen, K., Piirto, A., Vanharanta, H.: The Deltoid Application for Competence Analysis and Development of Control Room Operators. IASTED International Conference on Neural Networks and Computational Intelligence, Grindelwald, Switzerland. (2004)
29. Klir, J. G., Yuan, B.: Fuzzy Sets and Fuzzy Logic, Theory and applications, Prentice-Hall, Inc. (1995)
30. Reunanen, T.: Chronos and Kairos –Understanding and Managing Time. In Kantola, J.:Oranizational Resource Management. –Theories, Methodologies and Applications. CRC Press, Boca Raton (2015)
31. Vanharanta, H.: Pursoid: Innovation Competence of Human resources in. Kantola, J.: Organizational Resource Management: Theories, Methodologies, and Applica-tions. CRC Press, Boca Raton (2015)
32. Kantola, J.: Organizational Resource Management: Theories, Methodologies, and Applications. CRC Press, Boca Raton (2015)