Correlations Between Holistic Awareness of Time and Innovativeness

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Abstract. Time and innovativeness are crucial for organizations and human beings and are very hard to master. Without time management, this imperative resource is wasted or at least utilized poorly. Without innovativeness, there will be no new innovations, inventions, approaches or change to better. Even that these are commonly recognized to be very important, these issues are often still neglected. Time and innovativeness are quite similar also other ways. Both phenomena should be understood from a wider perspective in order to maximize their utilization. Both need to be approached from both personal and organizational point of views as well as understood human factor in both. Both phenomena can be utilized better by conscious awareness towards them and linkages between them should be understood. This paper presents research which shows that time and innovativeness development needs are behaving similarly. The correlation between these two phenomena was found and different development personalities are introduced as a conclusion. Future research aspects and recommendations are also discussed in this paper.

Keywords: Proactive innovativeness · Time management · HRM development Learning organization

1. Time personality

”Success in knowledge economy comes to those who know themselves, their strengths, their values and how they best perform” [1]. Drucker´s article is concentrating to personal skills in leadership domain and it is clearly shown that it emphasizes highly self-consciousness. “Effective executives do not start with their tasks, they start with their time” [2] shows that the time is always an imperative driver. This driver is a unique resource that cannot be stored, is perishable, irreplaceable and has no substitute. It´s not affected by demand it and no price or marginal utility van be found from time. Hardest part for leadership domain is that we are always lacking it. [1][3] Therefore the journey of developing to be an effective leader is to learn how to manage oneself and above all learn how to manage own time usage. Measurement of chronological time

duration, speed and numerical order with clocks [4], is not even near to managing it and even farer from understanding it. Conscious awareness towards own time personality and recognition how person experiences the time are should be clear before understanding and managing time can even be discussed [5].

Time´s two faces can be separated to subjective time and objective. [6] Objective time is also named to chronological time and it is a domain where business and management is done. Subjective time is domain leadership and human actions are done [5] Cf. for Czarniawska [7] for the history of Chronos (chronological) and Kairos (human time). Two ancient Greeks gods for time have given their names to these two faces of time. As chronological, objective, time can easily be synchronized with clocks or other specific measurement devices, subjective, Kairos time is relativistic and the speed of it is dependent on many different factors. Personal ways 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 domains which are biasing experienced time to differ from objective time [5].

At some point of life, most of us have experienced a loss of time tracking i.e. have felt the timelessness [14]. This why we have the expression “time flies”. An extreme phenomenon is called as flow, i.e. the complete focus and motivation. [14] And as opposite, everybody has experienced feeling that time stops when s/he has done something unpleasant or boring. The satisfying situation makes feelings towards time positive [6]. The hectic life or work situation may cause people the willingness to compress every moment of the day with very intensive activities, cut everything, what feels time waste at that time, and try to get only the essence of things to their mind. [3] Compressive mindset, if it is up kept too long, might end up to situation where person is "implying that rational reduction of information, emotions, and alternatives is necessary to reach organizational and individual goals." This leads to a situation where quality, creativity, open-mindedness, innovativeness, and empathy are reduced. [15] This compression of time is crucially against Drucker´s [2] suggestion, where people “have to feel that we have all the time in the world”. Studies show that if the balance is not found between personal life and work, the organization may start to lose their workers. Balance between personal and work life has been found to be the most or the second most important attribute of the job [16]. Self-development possibilities are also factors that make 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 it may rise unethical behavior [10]. Sleep-deprivation is shown to harm execution of time-pressured activities [9]. Personal traits are also key issues in time personality and it´s biases towards objective time [5]. Traits that are found are perfectionist, preemptive, people pleaser and procrastinator [11]. Harm will rise especially if person has insufficient delegating skills [17] and too optimistic future orientation [12]. Tendency for long-term vision reduces biases when compared to short-term visioning [6].

Before mastering concept of time or managing time, it must be recognized that time cannot be either accepted or denied. Each person should found own systematic ways how to become aware of one's own time experience, time personality and its use. Own thoughts and ideas towards time should be 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 (organization), peers, or

followers are using all time available [17]. Time usage should be 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 which division system will be utilized, it still should be kept in mind that time is a limiting factor in all activity - not tasks themselves.

2. Innovativeness

”Innovation”, in its wider and general meaning, can be defined to the processes where new ideas are implemented within an organization. Thus, innovation can be seen an establishment of new concepts, procedures or technologies. By nature, innovation processes are typically non-linear and require tools, which are flexible and adaptive. 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 and correlations between physical resources allocated to R&D activities and their successful outcomes. Recently more and more attention has been paid to other factors, so-called innovation drivers. These drivers are thought to act as an innovative stimulant for any R&D system. The mental facilities are also taken account in the system as at least as crucial elements as the physical ones. E.g., a right kind of state of mind, together with a positive attitude towards innovativeness and personal time management skills can be such essential elements [23].

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

At least part of all innovative activities is innovating human systems and the mental models. Human beings are the very basic building material of any organization. These mental models should be formed by using a bottom-up philosophy, which means that organization culture and management philosophy permits and encourages idea generation among employees. Freedom to bring some experiments into effect without a fear is also needed. [25] Nevertheless a top-down philosophy is also needed for goal-oriented steering and controlling of the system. Using just bottom-up philosophy might lead to anarchy and uncontrollable chaos in the innovative process and top-down philosophy alone might suppress innovativeness and restrain motivation in general. In most creative activities, the question is 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.

3. Research setting and approach

This research is done in order to point out correlations between holistic awareness of time and innovativeness. Starting point for this research is in research is in Reunanen´s Windahl´s and Vanharanta´s earlier study where innovativeness and time management was first compared [33] As in earlier study, the main approach and mindset for this research is applying Evolute based applications called Chronos & Kairos [30] and Pursoid [31]. These approaches are utilizing ontology engineering, the precision 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]. Chronos and Kairos are designed to reveal individuals´ conscious awareness towards time [5] and Pursoid is developed in order to have the possibility to analyze conscious awareness concerning individual innovation capabilities and competences. [31] Both application statements are developed so that they will give a comparable overview of respondent´s current situation and feelings and target situation and desirable feeling. Remarkable of these applications is that respondents answers to statements so that they could choose any analogic answering scale for these two (current and target) situations. Scales for answers are for example never, sometimes, usually and always but such as in Likert scale there are no steps and respondent can answer freely i.e. analogically at any point of the scale. This method is called VAS-meter (Visual Analogue Scale), and it is specially developed to describe subjective issues [34].

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 into two main classifications: 1) managing time and 2) experiencing time. These features and categories are consisting 168 statements to be answered. Pursoid consists (n=36) individual features called competences, which are grouped into different (n=9) sub-groups and two main groups: 1) personal competences and 2) social competences. These competences consist of 170 statements.

All answers to statements were handled as decimal number variables valued between 0 and 1. Fuzzy logics were used in order to form respondent's linguistic answers to numbers. Fuzzy logic is used in order to process linguistic data in computational, numerical ways. Fuzzy sets are ways to represent vagueness in linguistics [27]. Fuzzy logic is used in the applications 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, rule-base and defuzzification [29].

In order to find out whether there are correlations between innovativeness and time, this research´s Proposition 1 is: Persons have similar development needs in time management and innovativeness management and Proposition 2 is: People can be divided to different development personalities according to time management and innovativeness management.

4. Research data

Research data collection was executed in 2014 – 2015 and consisted of 108 individual respondents answering both research applications. Respondents were students from Turku University of Applied Sciences. Students were mostly from engineering and business degree programs and represented full-time students and part-time (working adult) students. Age variety was 18-52 and arithmetic average settled to 25.6 years when 2 of respondents didn´t want to reveal their ages. Both genders were presented. From 108 respondents 19 answered female and 28 answered male and 61 respondents did not answer to this question. Respondents´ work experience varied from 0 years (19 respondent) to over 20 years (8 respondents). Average settled for 5.6 years and a major part of respondents (55 individuals) had 1-5 years working experience. The second largest group had been working between 6 -10 years (21 respondents). Respondents´ nationality was mostly Finnish. From 108 respondents there were Czech, French, German and South Korean one per each, Austrian, Chinese, Spanish two from each and rest were Finns.

Respondents answered to 168 statements in Chronos & Kairos in a way to reveal their creative tension i.e. proactive vision. This was done so that respondents answered to their current status (their present feeling towards statement) and future status (target feeling, how they would like to feel towards statement in future). I.e. every respondent answered two times to every statement. All respondents answered similar way also to 170 statements in Pursoid tool. This way all respondents had answered to 2 times for 168 + 170 statements when they had accomplished both research tools. This gives 73.008 different individual variables to research data mass. Creation of data mass is shown in equation 1 below here, where x is a number of variables and n is number of respondents.

$$x = 2 \cdot n \cdot (168+170) \quad \textbf{(1)}$$

Creative tension, the main handled variable in this research, is the difference between target status and current status and therefore points out respondent´s direction and amount of the need for the development in different domains. The creative tension was calculated by subtracting current status variable from target status variable. All statistical analysis was made in Excel.

4.1. Data analysis

Statistical analysis started so that all input data was exported from Evolute tool to excel files. This was done according to have the possibility to compare results from different respondents and to ease analysis whether the respondents could be grouped into different groups. Compared to earlier research (cf. Reunanen, Windahl, Vanharanta) [33], which already gave insights and research data that innovativeness and time management should be compared. First thing was to calculate creative tension from all answers to all respondents. Figure 1 is illustrating results of calculation of the creative tension from C&K tool´s inputs. The second column from the left indicates respondents´ ID number, which is used for identification of single respondent (only part

of respondents is shown). Respondents cannot be identified further than their answers to the demographic question so anonymity is guaranteed to respondents. Top row is showing the statements (only part of statements is shown) and respondents´ answers are shown in the crossings of statements and respondents.

Figure 1. Results of Creative tension from Chronos & Kairos

Figure 1 is also showing the next step of data analysis. All answers are categorized into five different levels. Since all answers were quantified from linguistic answers to numbers between -1 and 1 grouping was done so that first group was done as shown in table 1. In the table, T is marking respondents´ quantified answer from the C&K application and I answer from Pursoid application. Groups are not identical. As seen first and second group´s scale is different in C&K answers from in Pursoid answers. The reason for this is when groups were made very many answers in Pursoid data mass is concentrated to quite a narrow area. From this will be discussed later more.

Table 1. Groups for answers

Group number	Scale in C&K answers	Scale in Pursoid answers
1	$0{,}5 \leq T \leq 1$	$0{,}4 \leq I \leq 1$
2	$0 < T < 0{,}5$	$0 < I < 0{,}4$
3	$T = 0$	$I = 0$
4	$0 > T > -0{,}5$	$0 > I > -0{,}5$
5	$-0{,}5 \geq T \geq -1$	$-0{,}5 \geq I \geq -1$

This grouping gives the possibility to group respondents to different groups. As simplified: when respondents have answered so that creative tension results over 0.5 or under -0.5 it means that respondent has strong will to change that domain. If respondents answer is between 0 and 0.5 or -0.5 s/he would like to change that domain but not as strongly as in previous cases. If respondent´s creative tension is 0 it means that, s/he is satisfied to current status. Since groups were formed clearer in C&K Time management application. This was taken to be the driver. Respondents were grouped into five different groups according to their results from creative tension in time management. The first group consists respondents (n=19) whose creative tension was over 0.5 in 20 more statements. Second group (n= 22) are respondents whose creative tension was 0.5 in 10 to 19 answers. The third group (n=16) was conducted from respondents who had

over 0.5 creative tension in 5 to 10 answers. Fourth group (n= 33) had creative tension over 0.5 in 1 to 4 answers and last group (n=18) who had 0 answers´ creative tension over 0.5. Figure 2 shows how respondents were grouped according to their creative tension in the C&K application. As seen from figure 2, respondents´ answers in Pursoid tools is set adjacent to their answers in the C&K.

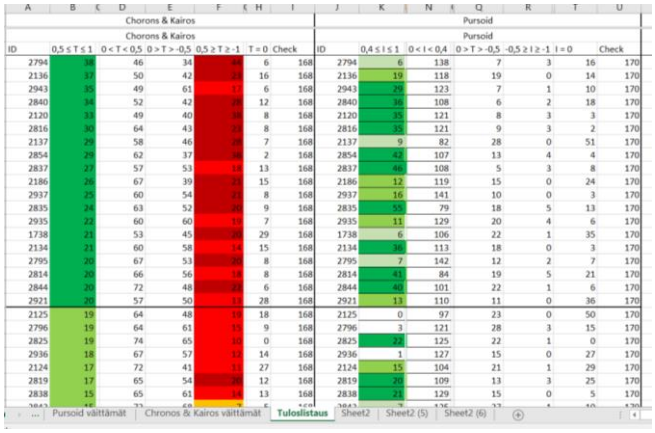

Figure 2. Grouping the respondents

Figure 2 is showing the example of categorization of respondents´ answers. The first column is ID and after that is categorized rows of creative tension results. Coloring was used in order to ease to see the results to researchers. Figure 2 is quite nicely showing that in group 1 most of the respondents had also very high results on answer group 5 in C&K (lessen something very strongly) and answer group 1 in Pursoid.

After grouping the respondents every groups´ averages (arithmetic means) was calculated for each answer groups. This was done in order to find out the distribution of answers in each group. Average handled here is average of how many answers of each respondent group is settled under certain answer group. Percentage of each answer groups was done simply by dividing average number by a number of total statements, which were 168 in C&K and 170 in Pursoid application. Table 2 is showing the distribution of answers to answer groups (AG) and their share as a percentage of all answers for each respondent groups (RG) from C&K data.

Table 2. Distribution of answers in different respondent groups from C&K data

	RG 1		RG 2		RG 3		RG 4		RG 5	
	Mean	%	Mean	%	Mean	%	Mean	%	Mean	%
AG 1	26,9	16,0	13,6	8,1	6,7	4,0	2,3	1,4	0,0	0,0
AG 2	58,5	34,8	69,6	41,5	72,1	42,9	77,2	45,9	79,5	47,3
AG 3	11,1	6,6	12,0	7,2	21,0	12,5	17,8	10,6	23,2	13,8
AG4	48,1	28,6	61,1	36,4	60,1	35,8	67,8	40,4	65,1	38,8
AG5	23,4	13,9	11,5	6,9	8,1	4,8	2,8	1,7	0,2	0,1
Total	168,0	100,0	168,0	100,0	168,0	100,0	168,0	100,0	168,0	100,0

Table 3 is showing the distribution of answers to answer groups (AG) and their share as a percentage of all answers for each respondent groups (RG) from Pursoid data.

Table 3. Distribution of answers in different respondent groups from Pursoid data

	RG 1		RG 2		RG 3		RG 4		RG 5	
	Mean	%	Mean	%	Mean	%	Mean	%	Mean	%
AG 1	26,0	15,3	10,4	6,1	6,0	3,5	4,2	2,5	1,0	0,6
AG 2	113,2	66,6	123,2	72,5	125,6	73,9	127,9	75,2	117,6	69,2
AG 3	14,7	8,7	14,9	8,7	18,8	11,0	16,2	9,6	24,8	14,6
AG4	14,2	8,3	20,5	12,1	19,4	11,4	21,5	12,6	26,4	15,6
AG5	1,9	1,1	1,0	0,6	0,3	0,2	0,2	0,1	0,2	0,1
Total	170,0	100,0	170,0	100,0	170,0	100,0	170,0	100,0	170,0	100,0

Also, the comparisons between averages of answer groups from whole sample group would give useful information to research. This is provided in table 4. Column at far right is the difference between averages as an absolute value.

Table 4. Averages of answer groups from whole sample group

	C&K %	Pursoid %	$\lvert\Delta\rvert$
AG 1	5,9	5,6	0,3
AG 2	42,48	71,48	29
AG 3	10,14	10,52	0,38
AG4	36	12	24
AG5	5,48	0,42	5,06
Total	100	100,0	

Table 4 reveals that there are no significant differences between answer groups 1 and 3. Largest differences are in answer groups 2 and 4. Also the significant difference is that in Pursoid there is a very limited number of answer group 5´s answers. These differences can be explained by the difference how C&K and Pursoid tools are designed. The amount of statements of issues, which typically are lessened in development, is different in C&K from Pursoid.

4.2. Comparison of results

It also seems to be the trend in other respondent groups so that number respondents´ answers are concentrating on same answer groups in both applications. Figures 3-7 show the results of different respondents´ how their answers are divided to different creative tension answer groups. Left pillar in all figures is showing the percentage of answers of creative tension in time management (the C&K application) and the right pillar is showing creative tension in innovativeness. The x-axis in figures 3-7 is answer groups introduced in table 1 and Y-axis is percentage compared to all answers.

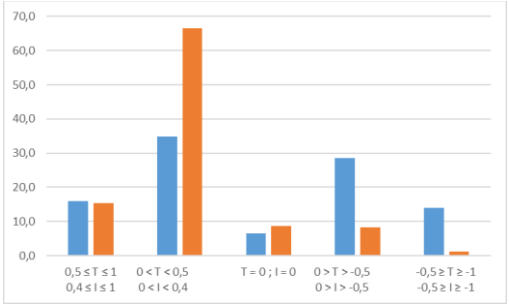

Figure 3. Division of answers in respondent group 1

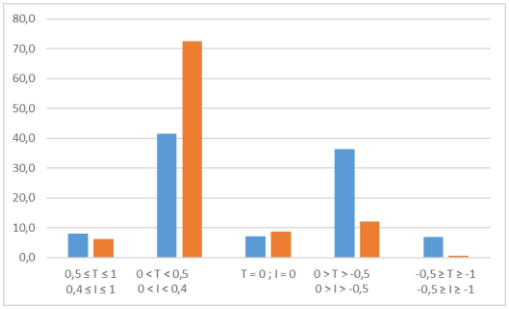

Figure 4. Division of answers in respondent group 2

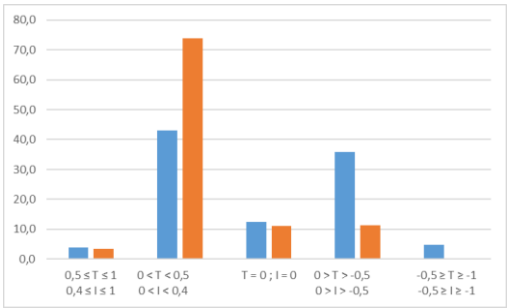

Figure 5. Division of answers in respondent group 3

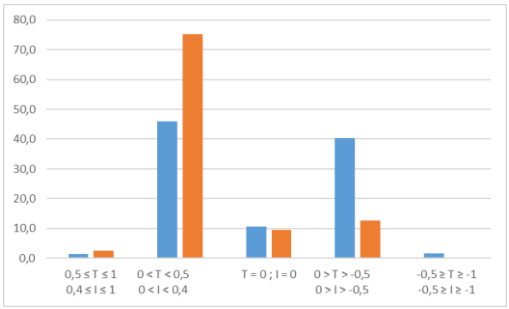

Figure 6. Division of answers in respondent group 4

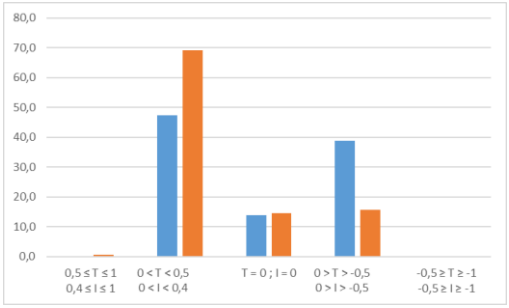

Figure 7. Division of answers in respondent group 5

As seen from the figures 3-7 it is quite clear that creative tension between time management. In almost all cases, the answer distribution was similar between C&K data and Pursoid data. When analyzing the figures 3-7 and tables 2-4 it is clearly seen that in every case and as whole the number of answers is behaving similarly between C&K and Pursoid data mass.

5. Conclusions

Time and innovativeness are not easy to master and but still are crucial for nowadays managers and workers. Both seem to be situational form their nature and quite clearly, there is some kind of connection between time and innovativeness in peoples mind and feelings. As they, both need intentional development in order to proceed in way of mastery it seems that they cannot be separated in this development.

It seems that there is a lot of correlation between time and innovativeness. When respondents were grouped it revealed that the positive development needs in time management also was very directly showing that these same respondents also were in strong need of positive development needs for innovativeness. It was the same situation as well in case of negative development (lessening something) and in the case when no development need was found. This correlation was shown in all groups quite clearly. For these results, it can be assumed that this research proves that there is a correlation between time personality and innovativeness personality.

All graphs and comparisons are giving the same results. Respondents´ development needs are behaving similarly in the holistic development of time and innovativeness management development. The correlation is clear, both research applications are done so that improbable correlations should be avoided and respondents have answered to both tools in less than one-week time window i.e. they have had quite a similar situation in life. This gives us a result that Proposition 1 was correct: Persons have similar development needs in time management and innovativeness management.

Proposition 2 was also correct: People can be divided into different development personalities according to time management and innovativeness management. In this research, respondent groups are represented by respondent groups. Respondent group 1 can be named to “passionate developers”. They have strong need to either add or lessen something in both time and innovativeness management and they feel it very

strongly. Respondent groups 2 and 3 are very similar, and it is hard to find anything that differs them distinctively from each other. Therefore, this group could be merged and named to “developers”. They have a need for development, but their passion is not as extreme as in the first group. Respondent groups 4 and 5 are very similar to each other also. As in case of groups 2 and 3, groups 4 and 5 cannot be divided very clearly from the results. Therefore these groups could also be merged and named to “no rush developers”. They also have some needs for development but they have no extreme passion and their creative tensions are quite low in both directions. Therefore we can conclude that there are at least three distinctive groups of development personalities when scrutinizing it from time and innovativeness management point-of-view.

In order to strengthen these main conclusions next research questions could be: Which statements are mostly correlating between Chronos & Kairos and Pursoid applications? Are these statements same with same respondent groups or do they differ? Which is leading which? Does enhanced time management skills automatically enhance innovativeness or vice versa? In order to find out more detailed information, to make more deep conclusions, more thorough statistical analysis should be made.

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