

Personality as a factor which influence the innovativeness¹

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Abstrakt. The paper presents personality –related factors which influence innovative activities. Analysing problem solving styles(innovative, adaptive) in relation to personality traits and innovative achievements. The article aims is to identify the personality traits of innovators, and ultimately a better understanding of their needs. Moreover to create the organisational conditions for more effective support for innovations.

Keywords: innovativeness, personality traits, innovative, adaptive style, HRM

1. Introduction

Features characteristic for the personality of an innovator include openness, independent thinking and persistence in pursuing goals. Tokarz[1] points out that, in addition, in order to understand the personality of an innovator, it is crucial to analyse motivation mechanisms as well as dimensions (determinants) of his personality, which, according to him, include: a strong ego, elasticity of cognitive structures, non-conformism, and spontaneity, tolerance, of cognitive incompatibilities, internal steerability, autonomous cognitive motivation, aesthetic attitude, originality and self-fulfillment. A division based on two basic styles of problem solving in innovative and adoptive work situations remains popular [2,3,4]. The adaptator's goal is to improve his actions and, for this reason, he draws from an existing pool of well-proven solutions and procedures on the basis of the existing means and measures, he is disciplined, systematic, sensible, monotony-resistant and meticulous. In social relations he demonstrates conformism, he is dependent, sensible, needs acceptance when going beyond rules, sensitive to others, creates the climate of security, ensures stability and order, upholds collaboration. An innovator acts with an objective of introducing changes and, for this reason; he is in search of new solutions going beyond a given situation. He does not take the existing external limitations or available resources into considerations and he reanalyses a problem in a unique way. He is not capable to taking routine actions in a longer perspective. He often does not accept customs and habits, is independent, break rules and does not need support, is perceived as insensitive to others, increases the dynamics of interactions in a group. In some cases, he threatens group work.

The difference between the above-described styles concerns mostly: perception of problems, methods of their solving, introduction of solutions, the degree of exploration and attitude towards changes. In this case, the assignment axes are: originality, which his higher in the Innovator (reconstruction and change, a high risk of inaccuracy), low in the Adatpator (accuracy, sense and appropriateness), productivity – high in the Adaptator (methodicalness and regularity), incontinuous in the Innovator (lack of regularity, irregular productivity) and conformism to rules – low in an Innovator and high in the Adaptator. Although they are subject to the same motivating influences in an organisation, their reactions to the influences are slightly different. Adaptator's motivation towards creativity is connected with a combination of external and internal motivating factors which change in connection with the certainty of outcome[5]. Adaptator's creative motivator, which is relatively low in relation to Innovator's motivation, is the lowest when the result is maximally uncertain or maximally certain. It is exactly the other way round with an Innovator, as his motivation during both maximum outcome uncertainty and certainty is the highest.

¹ Scientific work financed from funds for science in the years 2010-2012 as research project No. 18/18.200. 238 "HRM as a tool to support innovation of enterprises"

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In addition, the research confirmed a positive correlation of the problem-solving style with the tolerance for ambiguity [6] and locus of control, optimism/ pessimism [7] indicating that, in the business context, Innovators (persons demonstrating an innovative style) are more motivated towards demonstrating creativity. An important theory of intrinsic motivation is Bandura's [8] theory of self efficacy, which focuses on the fact that assessment of own abilities and competences is a motivating factor. Strong faith in one's abilities not only affects choices and actions of individuals but also affects their determination and buoyancy shown also as the ability to regain one's strength after failures. In addition, persons with low self-esteem are more motivated by reactive and conservative stimuli than pro-active strive for improvement [9]. The above deliberations indicate that motivation towards innovative actions is largely motivated by personality features. The below-presented results related to personality, self-assessment of preferences and work style of respondents. They also include questions about respondents' attitude towards risk, group work, creativity, entrepreneurship, etc. On the basis of the above-presented theoretical analysis one may presume that innovators tend to be self-assured and remain self-assured when they are not sure what their colleagues think about them, they are not easily discouraged, tend not to prefer team work, are not prone to feel guilty in case of failures, etc.

2. The purpose and method of the research

The question whether the capacity to innovate is more a function of the right environment or it is connected with particular predispositions of individuals is analysed by many researchers [10,11]. According to Drucker [12] and Adair [13] there is no such thing as "an entrepreneurial personality" and it is actually the organisation that should be flexible enough to create a fruitful balance between structural restrictions and personal freedom. Therefore, on the one hand, it is necessary to build trust in an organisation and release commitment [14] while, on the other hand, it is required to analyse individual personality determinants of the innovation process. In addition, many researchers indicate that these approaches should not be in opposition. The article has been written to answer the following questions:

What are the personality characteristics of persons creating innovations?

What aspects of their style of work make it different from the style of work of other employees?

What aspects make them different from non-innovators?

The following personality factors and factors related to respondents' beliefs and preferences were analysed:

1. Innovative behaviour, e.g. inclination to risk-taking, attitude to rules.
2. Entrepreneurship – self-diagnostic on own entrepreneurial mindsets.
3. Sense of work – a conviction that one's work is not pointless.
4. Sense of role importance – a conviction that an respondent achieves success or fulfils a difficult task.
5. Monotony of work – work evaluated by an respondent.
6. Motivation to achieve – willingness to do something significant, attitude towards tough problems, fulfilment of own plans.
7. Locus of control – a belief about whether the outcomes of one's own actions are effective; responsibility for own success.
8. Leadership – an ability of influencing others, inclination to become a leader.
9. Teamwork – readiness to work in a team, evaluating one's competences in the context of leadership.
10. Domination / submission – when an respondent feels more comfortable: in a dominating or dominated role.
11. Self-esteem – questions concerning self-diagnostic on emotions when contacting an authority, etc.

A questionnaire survey will be run to answer these questions. The following statistical methods were applied in the research: Mann-Whitney's U test, ANOVA test for analyzing variance between means of several groups (qualitative and quantitative attributes), Pearson's chi-square test (in the case of an analysis of relations between two qualitative attitudes as well as analysis of Pearson's linear correlation of two quantitative attributes).

3. Results and discussion

Description of the researched group

113 employees hired in an innovative organization participated in the research. 43% of them have a university degree, 42% have secondary education, others – vocational education. Most of the sample consisted of people aged 25-45 – 61%, over 46 years – 34% and 4.6% of respondents is under 25. The group under research has been employed in the company for quite a long time. As much as 34% of the employees have been working in their company for 19 years or longer, between 9 and 18 years – 18% of the sample, 3 to 8 years – 35%, and others – less than 3 years. The largest group of employees comprises specialists – 41%, managerial staff – 12%, others are production and administrative workers. Employees who take business trips constitute over a half of the sample – 55%, including 11% per 10 and more trips annually. 14% of the researched group participate in works of the Lean Management team. The same number of the employees are members of the program, which aims at gathering and assessing proposals concerning suggestions of improvements in the company. 40% of the sample have, within the last 3 years, put forward proposals to this program, and 5 may boast developing patent-protected innovations.

Adaptive and innovative styles

In a first step, the style of problem-solving presented by an respondent was analysed. As to the analysis of style, the features concerning originality and effectiveness were taken into account. The more points a given respondent obtained, the more innovative his/her style was; the fewer the points, the more adaptive the style was. Consequently, 3 types of respondents were distinguished:

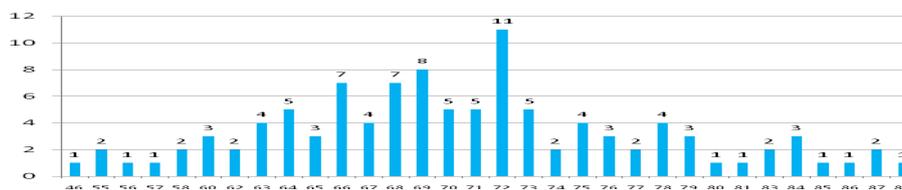
1. Adaptive type (adaptor) – a person who, in times of change, focuses on developing existing structures and aims at improving them. Such a person is disciplined, accepts presented problems, is precise and trustworthy. The behaviour of adaptors is predictable and more stable. As leaders, adaptors are good time-managers and planners.

2. Innovative type (innovator) – a person who strives for changes. An innovator is undisciplined, difficult to manage, has a creative imagination, creates own visions, often questions objectives and the way of introducing changes. They usually support radical changes. It may be disadvantageous that they incline towards implementing changes only to find out what happens, causing unnecessary risk. They tend to be disorganised and take up too many tasks at one time and, as a result, not finish any of them. Therefore, they are not effective.

3. Mixed type – a person whose style is not exactly defined; there is a balance between both features and, therefore, the results fall in the middle of the scale. They are a bridge between two extreme categories: innovators and adaptors. They naturally discern different points of view, act as intermediaries in communication between the two extreme groups, and play the role of mediators when conflicts arise.

Figure presents a scattering of points obtained by the respondents. The figure shows that the highest proportion of respondents are people whose style can be described as mixed. “Pure”- adaptors (received fewest points) and innovators (the highest score) are placed in two ends of the figure.

Figure. Presents a scattering of points obtained by respondents.



Source: own study

It was verified whether personality traits had an influence on the presented style and it turned out that dependences occurred in nine cases: self-esteem $p < \alpha$, ($p=0.000466$), leadership $p < \alpha$, ($p=0.026029$), sense of work $p < \alpha$, ($p=0.003750$), innovation $p < \alpha$, ($p=0.0005611$), entrepreneurship $p < \alpha$, ($p=0.004113$), teamwork $p < \alpha$, ($p=0.031942$), locus of control $p < \alpha$, ($p=0.000000$), motivation to achieve $p < \alpha$, ($p=0.001211$), and energy $p < \alpha$, ($p=0.041953$).

In addition dependence between personality traits and style was analysed using Spearman's rank

correlation coefficient (R). Spearman's rank correlation coefficient was $R=0.50$ which means that there is a moderate dependence but it is positive and directly proportional; the more "internal the locus of control", the more innovative the style becomes. There are also an explicit dependences but they are low, positive and directly proportional $R=0.34$ which means; the higher self-esteem, the more innovative the style becomes $R=0.32$ which means; the higher motivation to achieve, the more innovative the style becomes, $R=0.23$ which means; the more features of leadership, the more innovative the style becomes, $R=0.21$ which means; the more features proving one's abilities to work in a team, the more innovative the style becomes.

Therefore, it can be stated that people presenting the innovative style have a high internal locus of control, high self-esteem, a relatively higher motivation to achieve than the so-called adaptors. They are also more innovative in their actions, have a bit better leadership abilities and teamwork skills. Still, the two last dependences should be looked at with reserve. Firstly, because they are weak, and secondly, the leadership questions concerned self-diagnostic on own leadership abilities on the one hand, and a conviction that the respondents can influence and convince others as well as take initiative, on the other. Though, innovators cannot be said to be classic leaders but such features as initiative-taking and being convincing are definitely important, e.g. if we take the history of Google and its creators into account. It is similar as far as teamwork is concerned. The respondents evaluated their skills and whether they like working in a group.

The obtained results were also compared with hard measures of innovative engagement. It was researched whether there was a relation between the style and innovative achievements of respondents and their engagement in promoting innovation.

The test shows that there is a dependence between the style and innovative achievements of respondents $p < \alpha$ ($p=0.020409$) while there is not such a dependence between the style and promoting innovation $p > \alpha$ ($p=0.549278$). The Spearman's rank correlation coefficient was $R=0.22$ which means that there is an explicit dependence but it is low, positive and the higher the level of innovation in problem-solving, the more innovative achievements the respondents can boast.

Personal traits depending on a certificate

Further, it was checked whether personality traits were somehow connected with information included in a certificate. The results were obtained by means of ANOVA Kruskal-Wallis test. The test shows that personality traits do not depend on the level of education, place of residence, the fact of having siblings and age relative to the siblings.

The most obvious dependence was observed in the relation between innovative behaviours and innovative activity as part of the special programs measured by the number of proposals submitted and realised ($p=0.0433$). It was also confirmed, as expected, that entrepreneurship is connected with the activity of employees in the Lean Management team ($p=0.0148$). Moreover, the test reveals that there exists a statistically important difference as to the locus of control relative to gender ($p=0.0469$). Men tend to have more internal locus of control than women. The sense of role importance seems to be contingent upon a job position ($p=0.0211$) and the possibility of going on business trips ($p=0.0307$). It follows from the research that the sense of role importance is lowest among direct production employees in comparison to, for instance, managers and specialists. As far as business trips are concerned, people who travel a lot show a higher sense of role importance, which increases within the scope of 3-9 business trips per year and decreases slowly with the number of trips exceeding 10 a year.

Probably, such a great number of travels is more of a nuisance than a reward. Motivation to achieve seems to depend on tenure in trade ($p=0.0346$) and tenure in company ($p=0.0300$) as well as age ($p=0.0431$). In the case of tenure, the motivation factor increases up to the level of 9-18 years, and then falls a bit. As to age, motivation to achieve raises among employees at 36-45 years of age, then remains the same in the 46 to 55 age band and then decreases a little. Energy is related to tenure in trade ($p=0.0052$). It increases in the band of 3-to-8-year-long tenure, and consequently, decreases.

Personality traits versus innovative achievements and promoting innovation

When it comes to innovative achievements, the test shows a statistically significant dependence with self-esteem $p < \alpha$, ($p=0.042740$). The correlation coefficient was $R=0.20$ which means that the dependence is low, positive and directly proportional, so the higher self-esteem is, the more innovative achievements.

As to promoting innovation, the test shows a statistically important dependence with self-esteem $p < \alpha$, ($p=0.019428$), locus of control $p < \alpha$, ($p=0.016955$) as well as thinking of one's work as monotonous $p < \alpha$ ($p=0.032311$). The correlation coefficient of self-esteem was $R=0.23$ which means that the dependence is explicit but low, positive and directly proportional, so the higher self-esteem is, the more intense promoting of innovation becomes. The correlation coefficient of locus of control was $R=0.24$ which means that the dependence is explicit but low, positive and directly proportional, so the higher the locus of control, the more intense promoting of innovation becomes.

A reverse dependence was observed in the case of thinking of one's work as monotonous. The correlation coefficient was $R = -0.23$ which means that the dependence is explicit but low, negative and inversely proportional, so the more monotonous employees think their work is, the less willing they are to promote innovation.

Correlation between personality traits

A correlation matrix presents relations between personality traits. The red colour marks relations above 0.25. The greatest dependence $R=0.44$ is observed between self-esteem and locus of control as well as between motivation to achieve and teamwork, $R=0.43$.

Table 1. A correlation matrix between personality traits

	Self-esteem	Leadership	Sense of work	Innovation	Entrepreneurship	Teamwork	Domination/submission	Locus of control	Sense of role importance	Motivation to achieve	Monotony	Energy
Self-esteem	1.00	0.11	0.32	0.34	0.16	0.12	0.11	0.44	0.33	0.12	-0.14	0.05
Leadership	0.11	1.00	0.11	0.15	0.31	0.12	0.26	0.29	0.25	0.29	0.10	0.37
Sense of work	0.32	0.11	1.00	0.24	0.24	0.17	0.14	0.28	0.00	0.17	-0.14	0.12
Innovation	0.34	0.15	0.24	1.00	0.42	0.30	0.16	0.30	0.17	0.21	-0.12	0.30
Entrepreneurship	0.16	0.31	0.24	0.42	1.00	0.23	0.24	0.32	0.40	0.29	0.13	0.40
Teamwork	0.12	0.12	0.17	0.30	0.23	1.00	0.11	0.28	0.00	0.43	0.03	0.38
Domination submission	0.11	0.26	0.14	0.16	0.24	0.11	1.00	0.22	0.27	0.15	0.23	0.11
Locus of control	0.44	0.29	0.28	0.30	0.32	0.28	0.22	1.00	0.28	0.29	-0.18	0.19
Sense of role importance	0.33	0.25	0.00	0.17	0.40	0.00	0.27	0.28	1.00	0.04	-0.11	0.22
Motivation to achieve	0.12	0.29	0.17	0.21	0.29	0.43	0.15	0.29	0.04	1.00	0.04	0.31
Monotony	-0.14	0.10	-0.14	-0.12	0.13	0.03	0.23	-0.18	-0.11	0.04	1.00	0.18
Energy	0.05	0.37	0.12	0.30	0.40	0.38	0.11	0.19	0.22	0.31	0.18	1.00

Source: Own study

The above matrix points to the groups of traits which can be combined. For instance, innovation is connected with entrepreneurship, self-esteem, locus of control, and energy but also willingness to work in a team. While entrepreneurship is related to innovation, sense of role importance, locus of control, motivation to achieve, and leadership abilities. Self-esteem depends on the sense of work, innovation, locus of control, sense of role importance, while leadership abilities – on domination, locus of control, sense of role importance, motivation to achieve, and energy.

4. Conclusions

It appears from the various tests made that the more innovative style the respondents have (unlike the adaptive style), the more innovative achievements they can be proud of.

People with the innovative style are usually self-confident, with internal locus of control who show innovative behaviour which involves, among others, a tendency to take risk more than others, leadership abilities and readiness to work in a team.

As far as innovative achievements are concerned, the test shows a statistically important dependence according to which the higher self-esteem, the more innovative achievements are.

Regarding promoting innovation, the test reveals a statistically significant dependence which emphasises that people who promote innovation are more self-confident and have an internal locus of control as well as

feel their work is not monotonous.

It should be noted from the analysis of relations between individual personality traits of respondents that the relation is strongest between self-esteem and locus of control as well as between motivation to achieve and teamwork. It means that if a person has one of those traits, it is probable that he/she has also the other one.

When seeking traits which differ innovators and people who can boast innovative achievements, the key ones involve self-esteem and locus of control. One cannot resist drawing a sad conclusion that a person who enters corporate structures already has the traits shaped. Since they are connected with the culture of a given culture, its environment, parenthood styles, and social and economic differences. So what actions can be taken within corporate structures in order to develop the desired traits? Personality traits are fixed and hard to change especially in mature years. Yet, it seems that putting pressure on development and understanding oneself better due to specially designed trainings or activities of managers aimed at fostering creative thinking, self-esteem of subordinates as well as highlighting relations between their engagement in work and results are most efficient in developing the desired traits.

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