

Socio-psychological Characteristics of the Innovative Potential of Students as Indicators of Professional Elitism in a Digital Society



Anna P. Avdeeva , Svetlana A. Grishaeva , and Zhibek S. Khussainova 

Abstract The digital society and, in particular, the digital economy require the employee to have certain competencies that aren't limited to computer literacy, information competencies, etc. The so-called soft skills become very popular, among which an important place is occupied by effective thinking skills, self-management skills, communication and managerial skills [2]. Soft skills are considered as a style of behavior that combines the parameters of social flexibility and individual activity. In turn, the ability to build business communications in the business environment, teamwork skills, leadership, and behavioral flexibility are decisive for innovative personality behavior, which is an integral indicator [6] of professional elitism of the personality and determines the person's ability to be adaptive to changes, generate changes, new forms of behavior and activities, change yourself, successfully carry out activities aimed at developing, implementing and disseminating new ideas, products, and technologies [3–5]. The article presents the results of a study of the socio-psychological characteristics of students' innovative potential, including value orientations, professional motivation, socio-psychological qualities, as a condition for further professional implementation [1]. It's proved that students with different levels of development of innovative potential prefer to work in companies with different types of organizational values (adochocratic, market, clan, hierarchical types of organizational culture); students with a high level of innovative potential to a much greater degree show leadership qualities, are focused on the role of entrepreneur and senior manager.

A. P. Avdeeva (✉)

Moscow State Technical University N.E.Bauman, Moscow, Russia

e-mail: ap.avdeeva@rambler.ru

S. A. Grishaeva

State University of Management, Moscow, Russian Federation

e-mail: grishaeva@bk.ru

Z. S. Khussainova

Buketov Karaganda State University, Karaganda, Republic of Kazakhstan

e-mail: zhibek.khussainova@mail.ru

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1 Introduction

A modern digital society is a society that is constantly transforming and, therefore, requires the skills of readiness to accept and manage these transformations, i.e. readiness for innovation, which is determined by the level (degree of development) of innovative potential. Value orientations, worldview features of students associated with development and transformation form the highest level of socio-psychological characteristics of innovative potential.

Value orientations are the basic forms of the functioning of values at the level of the individual and they are also determined through the concepts of goal, attitude, and personality attitudes. The value orientations reflect the semantic meaning of the value categories of creativity, innovation, development, transformation for students as a large social group.

2 Background and Methodology

Groups with different levels of development were identified to study the socio-psychological characteristics of the innovative potential of students.

Diagnostic tools included the questionnaire «Self-assessment scale of innovative personality traits». The questions of the questionnaire were grouped on two main scales: (1) activity (intellectual, social, behavioral) and (2) flexibility (emotional, intellectual and behavioral). Students had to determine their similarity to that person, and give an answer for each of the judgments using a 3-point scale—from 0 (not suitable) to 2 (completely suitable).

To establish groups of respondents which difference depending on the level of development of innovative potential, the procedure of descriptive statistics was applied - the calculation of the average value. Based on indicators of average values of the severity of innovative potential, two groups of students with a high (VIP) and an average (SIW) level of development were identified. The group with a high level of development of innovative potential included students with values above the average, and the other group included respondents with indicators of the severity of innovative potential below the average.

Student distribution results are presented in Table 1.

Table 1 Assessment of the level of development of innovative potential of students

Integral characteristics of the innovative potential of the individual	Mean ($n = 54$)	SIP average value ($n = 35$)	Average value of VIP ($n = 19$)
1. Activity			
1.1. Creative activity	1.3	1.0	1.5
1.2. Independence	1.1	0.9	1.2
1.3. Riskiness (risk appetite)	1.3	1.0	1.6
1.4. Social activity	1.5	1.2	1.7
ACTIVITY INDICATOR:	1.3	1.0	1.5
2. FLEXIBILITY			
2.1. Uncertainty tolerance	0.7	0.3	0.9
2.2. Learnability	1.4	1.2	1.6
2.3. Open to new	1.1	1.4	1.9
2.4. Creativity	1.4	1.1	1.8
Flexibility indicator:	1.1	0.7	1.6
9. Total score – The final indicator is the level of development of the individual's innovative potential	1.2	0.8	1.6

3 Results

To identify the differences between the two groups of students with a high and medium level of development of innovative potential, the nonparametric Mann-Whitney coefficient was calculated. For all indicators of innovative potential, statistically significant differences were revealed ($p \leq 0.05$), with the exception of the indicator «independence». Figure 1 shows a comparative analysis of the profile of innovative potential of students with high and medium levels of development of innovative potential.

Thus, based on a comparative analysis, we came to the conclusion that students with high innovative potential are dominated by personality traits:

- creative activity
- uncertainty tolerance
- learning ability
- riskiness
- openness to the new
- creativity
- social openness.

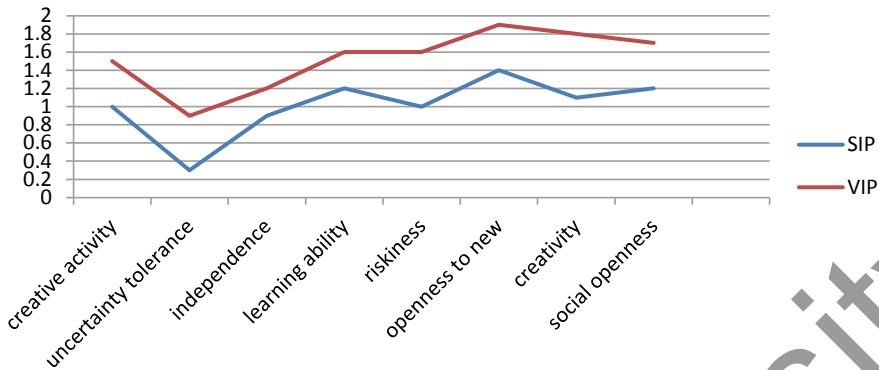


Fig. 1 Student innovation potential profiles

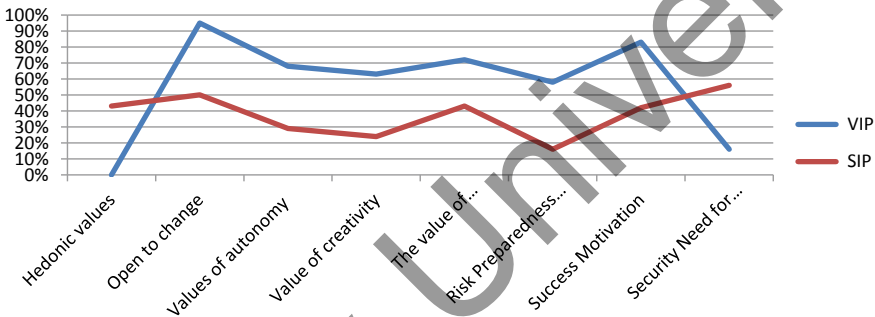


Fig. 2 Student values profile

Next, a comparative analysis of the value-semantic characteristics of the innovative potential of students with high and medium levels was carried out (Fig. 2).

The structure of values of students with an average level of development of innovative potential is dominated by hedonic values associated with the orientation of these students on a pleasant pastime and rest. The maximum value of hedonic values is characteristic for 43% of respondents in this group. In a group of students with a high level of development of innovative potential, we observe the opposite picture. So, 78% of students rated the hedonic value as completely insignificant for themselves (set the minimum value), and for 22% it has an average value.

It was found that the dominant values are openness to change as new experience, knowledge, ideas in a group of students with a high level of development of innovative potential. This value forms a positive attitude towards innovation and innovation in a professional environment. The significance of this type of value is of maximum importance for 95% of students included in this group. In the second group of students, characterized by an average level of development of innovative potential, openness to change has a maximum degree of significance for 50%. For other

students of this group, openness to the new, focus on changes is not the dominant value in their personality structure.

The values of independence (68%) and the value of creativity (63%) are also of the highest degree of significance for students with a high level of innovative potential. It's important for these students to show independence of thoughts and actions, they seek to show initiative, independence in life, work or interpersonal relationships. For students of this group, which focus on personal development, professional implementation is important life goals.

In a group with an average level of innovative potential, for 29%, the value of independence is of maximum importance, 24% of the respondents in this group consider the value of creativity as important as possible for themselves.

The value of professional development is maximally significant for 72% of students with a high level of innovative potential. They are focused on high standards in the professional field of activity, seek to achieve professional competence. 42% of students consider the achievement of professional excellence in work as an important goal in their life in a group with an average level of development of innovative potential.

Very indicative is the data reflecting differences in risk appetite for the sake of achievements among students with high and medium levels of innovative potential. More than half of students with a high level of development of innovative potential (58%) are prepared for risk for the sake of achievements. The level of their readiness for risk corresponds to the maximum values, the remaining students of this group revealed average values of indicators.

Value-based risk appetite determines an individual's focus on risky actions as opposed to cautious actions and behavior. The psychological preparedness for risk for children with high innovative potential is associated with their social attitudes—courage, determination, competition, and also the motivation for achieving success. Our research results showed that 83% of students with a pronounced innovative potential are dominated by the motivation to achieve success.

In addition, as we indicated earlier, these students are characterized by a manifestation of tolerance to uncertainty, which is consistent with the data of T. V. Kornilova et al. They emphasize that «personal risk appetite promotes cognitive risk as an effective acceptance of the conditions of uncertainty in the actual genesis of intellectual strategy» [7], p. 64).

Risk readiness is a manifestation of social readiness (according to L. Schmidt) as a tendency to act in an unusual way, to show independence and independence, not to wait for approval from other people [8]. The results of our study which showed that the need for security and stability isn't significant for 84% of students with a high level of innovative potential are also consistent with these data.

In a group of students with an average level of innovative potential, expressed (maximum value) risk appetite is typical for 12%, the rest of the children aren't expressed. At the same time, the need for security and stability in life is maximally significant for 56% of students; for 44% of children in this group, the significance level corresponds to average values. Data analysis showed that the predominance of

Table 2 Assessment results of dominant career orientations

Students career values	VIP (%)	SIP (%)
Professional competency	72	34
Management	47	26
Autonomy	67	32
Challenge	28	11
Lifestyle integration	63	46

motivation to achieve success is not typical for students in this group. This type of motivation was detected less than half of students (42%).

Summarizing the data obtained evaluating the value-semantic characteristics of the innovative potential of students; we can conclude that the level of development of innovative potential is due to the system of values and motivation.

Students with a high level of development of innovative potential are dominated by innovative values: openness to change, independence, creativity, professional development, characterized by a coordinated, consistent system of value orientations and motivation for success, readiness for transformation, which sets clear guidelines for life.

Analysis of the results of the study of students' career orientations showed their differentiation in groups with an average and high level of innovative potential. Significant differences were identified by the career orientations «professional competence», «autonomy» and «challenge». The results of the study of career orientations of students are presented in Table 2.

Diagnostic results of career values showed that students with a high level of development of innovative potential are dominated by the career anchor «professional competence» (72%). This result allows us to say that for students with a high level of development of innovative potential, the orientation to the manifestation of their talents and abilities in professional activity, the desire to realize them in innovative activity is most characteristic. In a group of students with an average level of development of innovative potential, this career orientation has a much lower frequency of occurrence—34%.

Career orientation «autonomy» characterizes the individual's desire for self-support, independence, freedom from prescriptions and restrictions. In a group of students with high innovative potential, this career orientation is predominant for 67% of respondents and it acts as a significant career reference for 32% of students in a group with an average level of innovative potential.

The main values of a person's career orientation «challenge» are related to overcoming obstacles, winning, achieving success, and competition. A person with such a career anchor is focused on challenging in various social situations; the process of overcoming difficulties, struggle and achieving success is significant for her. 28% of respondents from the group with high innovative potential have high values for this career orientation. Only 11% has an average value in a group with an average level of innovative potential,

Table 3 Orientation assessment results

IPL	Preferred organizational values			
	Adochocratic	Market	Clan	Hierarchical
	Initiative and freedom of action	Leadership and rivalry	Loyalty and cohesion	Stability and responsibility
VIP (%)	41	37	25	10
SIP (%)	22	14	29	37

In the group with an average level of development of innovative potential, 46% of children are dominated by career anchors as an integration of lifestyles, which reflects their high level of energy potential. They seek for success in life in different spheres of their life: in work, career, communication, family relationships.

The obtained results allow us to state that in a group of students with a pronounced innovative potential, the totality of dominant career orientations: professional skills, autonomy and challenge, characterizes innovative activity and flexibility in career choices. This set of career orientations characterizes the aspirations of these students for victory, independence, freedom from restrictions, independence, determination, they are focused on overcoming obstacles and aren't afraid of difficulties, difficult tasks, responsibility. They are energetic, active and focused on achievements in various spheres of their lives.

Further, we conducted a comparative analysis of the organizational orientations of students of two groups: with a high and medium level of development of innovative potential. Results reflecting students' preferences regarding organizational values (their organizational orientations) are shown in Table 3.

Based on the data processing, significant differences were revealed in groups with different levels of development of innovative potential. So, 41% of students with a high level of development of innovative potential are oriented to work in organizations with an adochocratic type of organizational culture (the core values are initiative and freedom of action. Innovation, enterprise, risk appetite and experimentation are required). 37% of students from this group would like to work in companies of the market type (core values—competitiveness, leadership, rivalry. Purposefulness, competitiveness, stress resistance are required).

It was found that the dominant organizational orientations in them are clan and hierarchical in a group of students with an average level of development of innovative potential. Thus, 29% of the respondents in this group are oriented toward work in organizations with a clan type of organizational culture (in their organizational structure they are similar to large families with a positive, friendly socio-psychological climate and a cohesive team of employees. The organizational values of such companies are associated with dedication and cohesion. Employees are encouraged by the ability to work in a team and also non-conflict. They are attracted to participate in business decisions).

36% of students with an average level of expression of innovative potential would like to work in companies with a hierarchical type of organizational culture.

These students are oriented to work in companies with strictly formalized organizational procedures, where the main corporate values are stability and responsibility. From employees, first of all, discipline and organization are required. The guys justify their choice by the fact that they are attracted by stability, job security, the availability of social benefits that organizations of the bureaucratic type can provide.

A comparative analysis of the organizational orientations of students with different levels of innovative potential showed the following differences. Students with a high level of development of innovative potential are characterized by the fact that they are oriented to work in companies where development values prevail.

Type of development values according to Prigogine [9], p. 37)—are the values of innovation, proactivity, competitiveness, leadership, determination, creativity, and professionalism. Students with a medium level of development of innovative potential would like to work in organizations with the type of values of order, well-being and relationships.

Values of order include punctuality, discipline, stability, security, responsibility. The values of well-being are associated with profitability, welfare, security, loyalty, conflict-free. Relationship values are presented as teamwork, trust, mutual commitment, respectfulness, goodwill, openness, honesty [9], p. 37).

Thus, we can conclude that students with different levels of development of innovative potential prefer to work in companies with different types of organizational values.

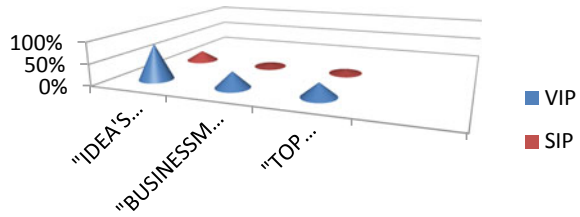
Socio-psychological qualities reflect the operational resources of a person, who has his significant goals for realizing. The results of the study of students communicative qualities with different levels of severity of innovative potential are presented in the diagram in Fig. 3.

Data analysis showed that in a group with high innovative potential, leadership skills are inherent in 47% of students. They have developed skills for effective communication, they are also able to establish and maintain business and informal contacts. These persons able to organize others, exert influence in the group, organize and lead teamwork. They are tolerant of uncertainty, adapt well in the new environment. Only 26% of students have developed leadership qualities in the second group with a moderate innovation potential. Most students in this group communicate and behavior is difficult because of the insufficient level of development of tolerance to uncertainty. New social situations may cause them to resist change.

We also studied the role orientations of students with different levels of innovative potential (Fig. 4). An analysis of the results of the study showed that 84% of students with a pronounced innovative potential see themselves in the social role of

Fig. 3 Leadership profile



Fig. 4 Social roles

the «generator of ideas», while in a group with an average level of expression of innovative potential, 24% of students identify with this social role.

The social role of the entrepreneur is oriented to 37% of students, who are members of a group with a high level of development of innovative potential. Only 6% of students identify with this social role from a group with an average level of development of innovative potential.

32% of students with high rates of innovative potential and 9% of students from the group with an average degree of expression of innovative potential see themselves as the top managers.

Specialist, who works as a team of an innovative project, should act as an innovative leader, able to fulfill a certain functional role or roles in the process of innovative activity. The role of the innovative type is a necessary condition for the innovation process in the Merrill's theory [10]. According to P. Merrill, the group of innovators should have a distribution of roles, while a lone innovator shouldn't only harmoniously combine these roles, but also replace each other in the course of the innovation process.

He identifies four social roles associated with the main stages of the innovation process. The innovative role of «creator» is manifested in the creation of opportunities. The second innovative role of the «ranger» is connected with the search for solutions—the implementation of the path from opportunity, idea to solution. The third innovative role of the «finalist» is aimed at putting the solutions into practice. And finally, the last innovative role of the «doer» is to implement, implement solutions. These roles are crucial to the innovation process and coincide with the stages of this process.

4 Conclusion

Summarizing the results of the study of socio-psychological qualities of students with different levels of innovative potential, we can write the following conclusions. Firstly, leadership as a fundamental communicative characteristic that reflects the activity and flexibility of a person in interpersonal communication is most pronounced among students with high innovative potential. Secondly, in this group of students, role orientations associated with innovative professional activities are

more pronounced than among students with an average level of development of innovative potential. Thirdly, socio-psychological qualities act as their real opportunities to achieve the goals of innovative personal and professional development for students with a pronounced innovative potential.

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