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## INTELLECTUAL ANALYSIS FOR EDUCATIONAL PATH COGNITIVE MODELING: DIGITAL KNOWLEDGE FOR POST-MODERN VALUE CREATION

### Abstract

The philosophy of cognition allows humans to better orient in the world due to the deepening and extension of available paths to follow. The cognitive modelling determines the understanding, knowledge creation and reality reflection in a person's conscience. The human persons apply the cognitive approach in the logics and ethics, the example to illustrate this refers to the regulative issues related to self-driving cars, the solutions for the making decision and for the responsibility.

Philosophy of education is a specific part of the general knowledge about the creation and transfer of knowledge that traditionally allowed scholars the understanding of the cognition process. The digital era gives broader sense to the cognition and the diversity of knowledge to analyze through the philosophical approach and to the synthesis through educational practices as a subject for the philosophical study.

The paper presents the longitude results obtained in 2005-2020 of the values that determine the choice of the educational trajectory on the level of the second degree of higher education – Master programs, which are not necessary for the majority of the corporate positions, that allows scholars to analyze this choice as reflecting the free interest of the potential students for their personal cognitive growth.

*Keywords:* values scale, social regulation, education, cognitive modelling, intellectual analysis, intelligence.

### Introduction

Human intellectual activity is examined as a part of the history of knowledge, the perception and understanding of the reality by humans. The empirical data collected with the human feelings underlie the knowledge; the scientific and technological development helps to collect the data with monitors, sensors and other tools fixing and registering the diverse indicators of the process-

es; the digital era allows humans to transfer the wider bulk of work to proceed and analyse the collected data from the the human brain toward the machine.

The machine learning and neuron networks allow humans to avoid a part of intellectual work, the “intellectual, analytical” systems represent the digitalized solution for the statistical data treatment, and the correlations concluded, that can help to understand the reality (Khansuva-

rova, T. A., Khansuvarov, R. A., & Pokrovskaiia, 2018). The intellectual systems' work can replace human activities in very numerous and diverse kinds of fields (Davenport & Kalakota, 2019). The life-long learning is one of the solutions for human beings who want to be involved into active life, with producing of any kind of creative products, that is reflected by the increasing interest of adults and graduates to the second (Master) level of higher education.

The pressure of the digital technologies, the neuron networks and artificial intelligence fulfilled by the computing techniques and information technologies forces part of people to change their professional speciality that is typical for the routine functions and jobs (Sigov, Uvarov, & Pokrovskaiia, 2017). At the same time, the cognitive approach to modelling the professional growth based on the intellectual analysis tools helps to discover more attractive activities, to develop the creativity (Ababkova, Pokrovskaiia, & Trostinskaya, 2018) and to enhance the human dimension with the capacities to build the cognitive model of the future self-realization (Ababkova & Leontieva, 2018).

The Master students represent the group of population with a high level of maturity, comparing to the Bachelor students who perceive the graduating as an opening of doors in the labour market. The results of the survey of the reasons within the Master education choice help us to better understand the real role of the human place in the information society and digital era.

The theoretical research intends to find the essential typical features of the post-modernity evolution of the life strategy of humans, on the example of the choice of educational strategies and parts in the professional activity, based on the empirical results of longitude study that took place in 2005-2020. The paper purpose is to dis-

cuss the interconnection between, on the one hand, the digital technologies' influence on the intellectual analysis, understood as machine learning applied to the labour market dynamics, and, on the other hand, the cognitive modelling of the personality self-realization and personal interests' embodiment through the choice of the professional growth and educational path.

#### Educational Path Choice Analysis

Today the young generation representatives coming at universities to get the higher education, especially, at the Master level of studying, are focused on achieving specific results and are choosing an educational institution, an educational program and, in general, the higher level of education, based on the planning of their own professional development and career growth according to their personal preferences. The personality plays a more important role in the social-economic pressure from the labour market, the employers' needs. The key importance of the formation of professional competencies is manifested in the independence of choice based on the values of labour and on the key motives of labour behaviour.

The orientation to the professional trajectory, which is typical for the Soviet period of development of the education system as a list of specialities replying to the criteria of the future employment through the system of planned distribution of graduates to enterprises, the description of the requirements was coherent to the future professional path, is now giving way to a new approach that aims the student to build his or her professional and educational trajectory autonomously, to create the curriculum vitae with their own interests, motivations and ideas for the future job.

The dynamics of the criteria for making a decision on the choice of a particular educational program clearly reflects the macroeconomic and socio-cultural changes taking place in society, as evidenced by the results of a sociological study of the model of preferences when choosing an educational program.

Since the decision to obtain or continue education is made almost completely consciously, the content of such a criteria' model can be studied on the basis of formalized methods of socio-

logical research. To identify the content of the criteria for choosing an educational program as an element of the trajectory of personal and professional development in a number of universities, economics and management faculties conducted a study aimed at identifying the decisive factors in choosing an educational level and educational program. The study was conducted during the last 14 years, starting in 2005, and included, among others, a direct question about the criteria that influenced a student's decision:

*Table 1*

The Significance of the Criteria for the Choice between the Educational Programs,  
% to the Number of Respondents

<b>Education strategy criteria</b>	<b>2005</b>	<b>2008</b>	<b>2012</b>	<b>2015</b>	<b>2018</b>	<b>2020</b>
Professional speciality	25,7	30,5	31,0	21,6	32,1	36,6
Communication with students from other countries	19,2	19,0	17,1	19,6	2,5	5,7
Communication with interesting teachers, professors	8,2	12,6	15,5	3,9	13,6	16,5
Ability to gain new knowledge and skills	51,0	56,3	58,9	51,0	43,2	48,5
Studying of foreign language	39,4	42,5	45,0	27,5	19,8	14,4
Semester of study abroad	9,2	10,9	14,0	13,7	18,5	8,8
Internship abroad	44,9	34,5	31,0	37,3	33,3	32,0
Employment prospects	47,9	50,0	62,0	62,7	56,8	26,8
Price	5,5	8,6	12,4	15,7	16,0	13,9
Reputation	10,3	12,6	16,3	19,6	17,3	18,0
The influence of parents, family, loved ones, friends	0,3	1,7	3,1	2,0	23,5	24,7

Source: (Pokrovskaja & d'Ascenzo, 2018); and the results of the research carried out with the participation of A. N. Levitskaya in winter-spring 2020 (the research director is N.N. Pokrovskaja), the results' report is not published yet.

The obtained results reflect the dynamic of the criteria applied by students to choose their educational path at the Master level, after having been graduated. If bachelor students are under pressure of the labour market to choose the required profession that corresponds to the vacant jobs proposed by employers, the Master studying is chosen by the students according to a different

logic. The Master students have already achieved the first level of higher education and received the diploma that is compulsory to obtain a well-paid job and the initial level of financial autonomy and to satisfy basic needs. Since the global crisis 2008-2009 the employment factors (dominating throughout the decade, first place in 2012-2018 - 62.0 and 62.7%, 56.8% in 2018), ceded

their priority place to the possibility of obtaining new knowledge and skills (almost 60% in 2008 and 2012, but only 51.0% in 2015, 43.2% in 2018, and 48.5% again in 2020). Over the 15 years, the factor of a foreign internship is slightly behind: third place in 2005 and 2018 - 44.9% and 33.3%, moreover, in 2008-2012, the internship took the 4th place, yielding to a foreign language study - 42.5% and 45.0%, but the value of the last factor in 2018 decreased to 19.8% and to 14.4% in 2020.

In the era of innovation growth, new knowledge and skills can constitute the key competitive advantage (Porter, 1985) of the graduate of the educational program in employment. The significance of the criterion for learning a foreign language is associated, on the one hand, with globalization and the rapid growth of international contacts in the last decades after 1985-1990, and on the other hand, with trends in expanding the field of application of future personal and professional competencies, and the importance of mobility of any type, including cultural and geographical mobility, is one of the elements of competitiveness in the labour market. A foreign language begins to act not so much in the role of the tool used, as in the role of an important element in the resume, without which the professional portrait does not look complete.

It can be concluded that the socio-cultural orientation to the pragmatism of educational activities and adaptation to government decisions, Eurasian integration and the development of an innovative economy, to macroeconomic shocks (financial and economic crisis of 2008-2010) are significantly reflected in the changes in the importance of various criteria for the selection of training programs.

As can be seen from the table, the dynamics of the criteria described above - the prospects for

employment and the expansion and updating of instrumental baggage of knowledge and skills, including a foreign language - have been fairly stable over the past ten years. At the same time, the dynamics of changes in the criteria and factors that had a decisive influence on the choice of an educational program testifies to the combination of behavioural patterns as a "forced" response to the demands of the labour market and the employer (the growing importance of the criterion associated with employment prospects, from 47.9% in 2005 up to 62.7% of 2015), with the desire to expand the set of its competitive advantages in the labour market.

In addition, making a conclusion about the underlying sociocultural reasons for such changes, it is legitimate to ask the question: does the second criterion mean self-actualization of students' curiosity or reflects the demands of an innovative economy that needs more open thinking. The answer to this question can be obtained in the course of in-depth studies of socio-cultural mechanisms.

A significant increase in the value of such a criterion as communication with interesting teachers (from 8.2 to 13.6% from 2005-2018), combined with a reduction in the importance of the criterion of the social category of students as a future social circle (from 19.2 to 2.5% ) forces us to conclude that the educational program is gradually becoming an area of transfer of knowledge and skills with a relative reduction in the role in the community, also very significant in terms of the formation of social capital, but still not decisive, given the function of the social institution of education as transmission systems of knowledge and experience from the older generation to the next one.

In this connection, the North American and Western European experience of forming a pro-

professional path and choosing a student's career planning in the higher education system is especially interesting, when the student is actively involved in the educational process as a subject of inquiry. The activity of the professional plan is based on the fact that the student comes to an educational institution with his own interest, generated by life and activities that he seeks to satisfy, for this he requires and seeks from the education system to provide the information and knowledge he needs, to develop the skills he needs. On this basis, the system of higher vocational education is transformed into a market for the demand for knowledge and supply. In this sense, the system of higher professional education can become a service industry satisfying the needs of the customer, in the highest sense of understanding the meaning and essence of the service sector. The educational services play the additional role on the level of national development (Eichengreen, Park, & Shin, 2014), the part of the population with the higher education is one of the determinants for the smooth economic growth.

At the same time, the need for educating a person, a personality and a citizen is not always realized and can be paid, such as, for example, a hairdresser's service. In this regard, students' personal and professional development is not only a subject of marketing efficiency of the higher education system but also a question of the responsibility of the state as a public institution, whose task is to redirect funds to the public good, which, in a certain sense, becomes personal and professional development in the context of the global socio-economic space of the XXI century. At the same time, the functional duty of the education system to prepare not only a professional, but also a citizen, is increasingly recognized both at the macro-level of management,

within the framework of state regulation of the educational system of the society, and at the micro-level, in terms of the needs of employers in mature and an adequate worker with a developed value-normative model of regulation of their own behaviour, and from the point of view of the consumers of educational services, students and their families, who understand the freedom and also the responsibility in the social development which requires not only professional but also personal competences in a knowledge-based economy.

In a global innovation economy, the key factor in the growth and well-being of society is the human potential of a firm or region. In a rapidly changing environment, only interest and adequate offer from educational institutions can help professionals effectively shape their life path and their professional career. The dynamics of criteria when making a decision on the choice of a particular educational program quite clearly reflects the macroeconomic and socio-cultural changes taking place in society. If we consider the transition from the Soviet administrative model to the market model, then one of the most striking differences is the emergence of the labour market and, in turn, the gradual abandonment of the mandatory distribution of graduates after completing any stage of education in any educational institution. The emergence, as a consequence, of the problem of employment until today has a serious impact on the form of the criteria model of the choice of the educational path of the consumer of educational services, students and his reference persons (parents, family, relatives, friends), making this choice increasingly pragmatic and translating work from the sphere of the final to the group of instrumental values.

During the choice of vocational education,

students are guided by many factors, among which the prospects for successful self-realization and a favourable starting position in career growth occupy key positions. The correlation of the significance of these two groups of factors - the content and functional characteristics of the place of work - depends on such external factors as the external socio-cultural environment, the level of economic development, as well as the intrapersonal factors associated with individual psychological preferences.

In general, since the period of transition in 1980-2000s, a shift took place in favour of functional motivators, in which work is considered by the employee as a tool for implementing external, non-content of labour, needs and goals. If during the Soviet period the first group of factors was decisive, including interest in the content of activities and self-actualization in work, then today a group of motivators dominates, orienting graduates' preferences to successful employment, including expectations of high-income jobs, as quickly as possible to achieve attractive status positions in prestigious companies reputation.

The relationship between the employer as a party to the demand in the labour market and students offering their talents and competencies in this market can be carried out within the framework of ego-marketing when the student studies the job offer and chooses his or her educational path based on the analysis of published job ads. In this sense, the harmony of the proactive and reactive approaches to the choice of a professional trajectory must be recreated: the ontological, existential desire of the individual to change the world with which the person is in contact, in accordance with his representative system, value scale and normative model, is implemented in the social fabric that offers forms

and ways of personal self-realization, in particular, in the professional sphere in the format of a profессиogram, the functional job description.

The harmonization of personal development and self-actualization of the individual and the employer's needs in the labour market, theoretically, should be achieved on the basis of the constant adaptation of the educational trajectory of each individual to the socio-economic and technological changes in the market. For such an adaptation, it is obviously necessary to harmonize the offer of educational services with the needs of employers and students.

The implementation of the functional aspect of education as a way to increase prices in the labour market can and should, as it seems, be based on an analysis of demand. Those. The choice of the educational trajectory should be based on the choice of deficient competencies, the acquisition of which should form the basis of the criteria cognitive model when choosing an educational program. The professional orientation of students takes into account this factor; however, there is no systematic analysis of the demand for competencies by educational institutions or students, which speaks today about the weak degree of adequacy of both reactive and proactive approaches to the formation of students' educational and professional trajectories.

A modern specialist is, first of all, an independent person who is able to build his own activity, coordinating his own values with the needs of the company. The professional builds a system of goals, giving them personal meaning. In this case, we can talk about successful work in the long term. On the other hand, the system of secondary education rarely considers the problems of meaning-building and goal-setting while preparing a person for independent activities.

Values are aspects of life that are significant

to a person. It is obvious that each person has his own hierarchy of values, but there are cultural values, the presence of which presupposes the full inclusion of man in society, enculturation. In this case, values act as general guidelines of activity. Values need awareness, or a person ceases to be the active agent, the author of their life. Modern science is characterized by the understanding of man as a phenomenon of culture, the human beings are perceived as the bearers of the intellectual capital and specific abilities to cognition that differs them from machines (Brooking, 1996). In the process of the activity of the individual in the space of culture, a person's values are formalized in the process of the activity in three categories – community, consciousness and activity: they are the universal ways of a person's being, the foundations of her / his life, and the whole universe of the actual human characteristics of this being.

Awareness of values is a complex process, the mastery of which is a component of human akmeological growth. The inclusion of the subject in the knowledge of their value structure is carried out in the pedagogical workshop. The embodiment of life values in the acts of life is carried out by setting goals.

The goal is an image of the desired result of the activity. Goals are essential components of a projective portfolio. It is the formulation and achievement of goals that determine the project nature of this type of portfolio. Moreover, it can be noted that goal-setting within the framework of developing a professional, educational, personal or other project makes it possible to move away from the reactive approach of building the personal and professional development of the child based on the system of society's requirements and to implement a proactive approach building your life and independent professional

and educational trajectory, rather than following the existing structure, that permits to analyze the reasons for the different educational and professional trajectories as diverse life paths, including the cognition as personal development and transfer of knowledge (Wei & Pokrovskaya, 2016). It is within the framework of creating their own life-world, a kind of concrete social innovation at the micro-level, that students realize their values on the basis of the self-realization.

### Conclusion

The development reflects an objective process of internal, consistent quantitative and qualitative change in the physical and spiritual forces of a human being. Personal development implies an increase in the readiness of the individual for an actual social activity based on spiritual and moral orientations. This reasoning implies the education of personality traits - useful for self-valuable society. The process of personal development of a person in the workshops occurs as a result of social interaction with other participants, accompanied by a rethinking of life experience. The collective form of education provides just such social creativity. The intellectual analysis is not able to replace the human for the making decision process but is helpful to build the cognitive map and the cognition model for every person within the knowledge society.

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