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FACTORS AFFECTING HUMAN CAPITAL FORMATION IN LOGISTICS ENTERPRISES

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Due to ongoing structural changes and socio-economic transition from the production economy to the knowledge economy, human capital plays a vital role in developing and creating new ideas and knowledge. Logistics industry is the fastest growing economic activity in Lithuania. The development of human capital becomes important in securing competitive advantage and improving performance for Lithuanian logistics enterprises. Logistics enterprises themselves try to find solutions how to create, develop and share the knowledge amongst its employees and how strategically develop and manage own human capital. The aim of the research is to examine the contemporary academic perspectives on measuring human capital and the factors affecting its value.
In order to provide theoretical and practical basis of the factors affecting human capital formation in logistics enterprises, a study of the correlation between internal and external factors was conducted. Based on the investigation of 30 respondents from Lithuanian logistics enterprises, the correlation between 20 factors affecting human capital value was analysed via a path and correlation analysis. The results of correlation analysis showed that there was a significant negative correlation between the factors of the external environment "Demographic" (such as migration, structure of population and others) and the factor from the environment of the individual "Family" content; the correlation coefficient was -0.671. And it was positively correlated with the factor from the environment of the organisation "Culture" and "Value of organisation" (+0,695).
Taking these results into consideration, the focus should be drawn on transforming the function of human resources management as well as providing a facilitative environment for developing the necessary skills in the professional and technical field.

Keywords: Human Capital, Logistics, Factor Analysis, Correlation Analysis.

INTRODUCTION

Human capital theory is a new concept of contemporary economic theory, which deals with the issues of the formation and quality of labour force. In the historical development of economic thought, scientists regarded people or their skills and abilities as a component of productive capital. This is how the concept of human capital began to form. The theoretical direction of human capital addresses the issues of labour force, its quality as well as the issues of economic growth. Various scholars substantiate the significance of social policy of the government and expenditure on education on the basis of this theory.

In the 21st century, human capital, namely, individual human experience, creativity, innovation, ability to work in a team, ability to learn and apply the acquired knowledge in practice, became the determining factor of economic and social growth. Many researchers argue that it is human resources rather than intangible resources that ultimately determine the pace of social development. Successful development depends on investing in people and exploiting the potential of human capital (Chlivickas, Papšienė, 2009).

Logistics enterprises are faced with exceptional situations and complex problems that must be dealt with employing innovation and new solutions, however, sometimes the lack of time, knowledge, experience or skills prevent them from doing so. In order to manage huge information flows, modern logistics enterprises need human capital that not only has the required knowledge, experience and skills, but can overcome obstacles in the short term and be able to analyse situations and make decisions.

Research problem. Human capital theory is characterised by a multidisciplinary approach. Researchers analysing human capital theory do not change the concept itself, but add some elements to it. It should be noted that there is no extensive scientific literature on the factors affecting the formation of human capital. Therefore, it is important to find out the main factors affecting the formation of human capital and how they affect the formation of human capital in logistics companies.

Research object – the factors affecting human capital formation

Research aim - to examine the contemporary academic perspectives on measuring human capital and the factors affecting its value.

Research objectives:

1) to provide a systematic approach to the concept of human capital and the factors affecting human capital;
2) to create the system of factors affecting human capital formation;
3) to evaluate the factors affecting human capital formation in logistics enterprises.

RESEARH METHODS

In order to achieve the aim, a descriptive method was employed and scientific literature on human capital and its factors was analysed. Based on logical thinking and theoretical literature, the factors affecting human capital formation were classified according to certain attributes. What is more, a system of human capital factors was formed. This system was useful in distinguishing the groups of factors affecting human capital formation. The research employs the method of content analysis; the material analysed in literature was collected using the following keywords: "human capital", "the factors affecting human capital formation". A questionnaire survey was conducted to find out the opinion of respondents on which factors are most important in formation of human capital in logistics enterprises. Respondents were selected by means of non-probability sampling, i.e. those working in logistics enterprises or related to them were selected. Correlation coefficient was calculated to determine the relationships between 20 factors affecting human capital formation.

THE DEVELOPMENT OF HUMAN CAPITAL

According to the knowledge economy it is not tangible resources, but people, their abilities and talents i.e. – human capital that constitute the main development and growth factor of the national economy and enterprises.

Leading enterprises take this aspect of growth into consideration by focusing on human resources and the development of human capital. The development of human capital is important for Lithuanian logistics enterprises as a means to secure competitive advantage and improve performance.

In scientific literature, extensive research is dedicated to the analysis of the phenomenon of human capital. Researchers (Potelienė, Tamašauskienė, (2014), Balogh (2013), Guščinskienė, Čiburienė (2013), Martins et al. (2010), Folloni and Vittadini (2010), Bagdanavičius (2002), Laroche, Merette, Ruggeri (1998), Čiegis (2006) who have analysed the development of human capital note that the founder of the concept of human capital is A. Smith, who expressed his thoughts on this topic already in 1776. A. Smith included the skills and abilities of employees as a part of capital, i.e. he included human capital in his definition of capital. He estimated that the skills acquired by workers were equal to a costly and well-functioning machine.

Previously, attempts were made to assess economic value of the population itself. Folloni and Vittadini (2010) argue that one of the first attempts to assess monetary value of the population was made by Sir W. Petty (1623–1687), who was the first to recognise the economic value of the productive capacity of the population in his works and sought to demonstrate that not only the territory and the inhabitants determine the well-being and strength of the state. W. Petty's studies focused on the monetary assessment of human capital and the impact of emigration on the economy.

Commenting upon the ideas of M. Blaug (1994), J. Guščinskienė, J. Čiburienė (2013) argue that one of the most prominent representatives of the neoclassical economics was A. Marshall (1842-1924). He adopted the concept of A. Smith, according to which education and acquired skills can be analysed as a separate type of investment in human capital. It was assumed that education can be considered as an investment decision that will increase income in the future.

I. Lapinskaitė, M. Krikščiūnaitė (2014) note that since the beginning of the 20th century the issues related to human capital have become increasingly significant. The ongoing scientific and technical progress determines constant change in the relationship between the elements of mental and physical activity in the workplace and the need for mental activity is increasing. It is argued that for a contemporary worker not only the length of time or the nature of the work, but also general education is important. Human capital, such as production skills, knowledge, abilities, etc. are the properties acquired by the individuals, which can be supplemented by new investment. These properties are examined from different perspectives by various contemporary economists such as P. A. Samuelson, W. D. Nordhaus (2000), P. Krugman, R. Wells (2006), D. Miles, A. Scott, F. Breedon (2012).

The importance of human capital theory became apparent at the end of the 20th century with the rapid development of scientific and technical progress, when the role of the human factor (employee education, qualification, etc.) increased both in terms of the results of an individual's work and employee activity prospects. The majority of the mentioned authors observe that modern human capital theory was formed in 1960 when the term "human capital" was first introduced by J. Mincer in neoclassical economic literature in 1958. Other significant authors should be mentioned as well: T. W. Schultz (1961) G. S. Becker (1962; 1964). A. Martins et al. (2010) note that until then the analysed concept had been called differently, e.g. employee value, human elements, human resources, cultural capital, etc. These authors updated the concept of human capital and developed the empirical foundations of human capital theory, which reaffirmed the relationship between human capital and economic growth and emphasised its importance in explaining the differences in earnings.

Summarising the analysis of human capital theory in the works of the mentioned authors, it can be stated that the scientific literature provides many interpretations of human capital theory, but a significant part of the authors agree that people should be associated with the concept of capital, because they are real costs of human upbringing and education, the products of human labour contribute to the creation of national wellbeing, while the costs that increase the production of a person promote welfare of the state. In view of the provisions of human capital theory, it can be stated that the development of the information knowledge society encourages many researchers to agree that human capital is one of the

most important factors of economic growth, however, the factors determining its size and efficiency have not been researched in great detail so far.

Classification of the factors of human capital

Modern human capital management allows organisations to quickly react to the environment changes; therefore, it is important to analyse the factors of human capital formation. Human capital formation and its use are influenced by various factors.

The analysis of the scientific literature reveals that the attention is focused on the questions concerning human capital formation. J. Bagdanavičius (2002) emphasises that there exist specific processes of human capital formation, which depend on individual abilities. The same resources intended for human capital formation can provide different capital amounts and results for different individuals.

According to human capital theory (Becker, 1964; Mincer, 1958; Schultz, 1961), education is the main factor that increases the level of individual abilities and the human capital itself. Individuals that possess higher qualification increase the overall production level. The classical model of human capital is intended for the evaluation of the education system (investments to science), as positive results in labour market and the economic growth are closely related to abilities and competencies of individuals. For this reason, human capital theory is connected with education and wages (Psacharopoulos, 1988).

According to T. W. Schultz (1998), the welfare of the community is firstly determined by the investments into people. He stated that determinant factors that allow to increase the welfare of poor countries are not only the land and crop areas but also the resident quality improvement, which is achieved by investing more into the education and health care sectors. In addition, he emphasised that values achieved by people – education, experience, skills, health – are the most important factors when seeking economic advancement.

T. W. Schultz firstly adds human abilities and knowledge, high qualification and health, which requires appropriate investments, to human capital. When dealing with the question of investments in the improvement of resident life quality, an agreement among three subjects – applicant, enterprise or organisation and country – is very important. Only positive personal determination to improve, moral and material support of the enterprise or organisation and beneficial government policy, based on material resources, can guarantee success. Personal decisions are determined by benefits and welfare that are expected from additionally acquired value of human capital (Bučinskas, 2012).

In general, the factors that influence human capital formation are classified into 6 groups by S. Potelienė and Z. Tamašauskienė (2014):

- demographic (e.g. distribution of people according to the sex and age, life expectancy and the pace of residential growth);
- socio-demographic (e.g. number of employed and unemployed people, their administrative and territorial distribution, number of economically active residents);
- social (e.g. health status, cultural level, migration rate, development level of territorial social infrastructure);
- economic, by distinguishing them into factors influencing human capital formation, preservation and development (e.g. resident distribution according to income groups, paying potential of residents, level of inflation and economic stability) and factors that influence human capital efficiency (i.e., overall economic situation, level of technical and economic development);
- organisational-economic (e.g. specialisation and concentration of production, collaboration level, position of international economic relations, organisational mechanism of economic functioning);
- ecological factors (e.g. ecological environment and sanitary conditions, overall ecological situation, recreational characteristics of the territory).

If we speak about human capital and the classification of the factors affecting its formation in accordance with the point of view of Z. Tamašauskienė (2014), it is possible to distinguish the most important factors from those that describe social, economic, demographic, geopolitical, national-cultural and other conditions that are intended for the development of the common economic zone or region.

I. Verhoglyadova (2006), S. Potelienė, Z. Tamašauskienė (2014) state that intensive factors are leading to the growth of human capital by mobilising the internal system reserves i.e., quality parameters. At the same time all of these factors are more or less intensive and influence the formation and use of human capital. Three main factors can be named that directly describe the size of the regional human capital, i.e. economic sizes, number of active residents and the pace of their growth, education index and health status of the residents. Other factors usually function indirectly.

Finally the factors of human capital can be classified into groups according to these criteria:

1. **According to the environment type**: internal and external.
2. **According to the nature**: demographical (people migration flow; distribution of residents according to their age and sex, amount of employed and unemployed people, etc.); social (health status, cultural level, migration rate); economic (distribution of population according to the income groups, overall economic state, organisational mechanism of economic functioning, etc.); ecologic (ecological environment, sanitary and hygienic conditions, etc.).
3. **According to the influence level**: macroeconomic, microeconomic and individual.
4. **According to the investment type:** governmental, regional, organisational, family and personal.
5. **According to the subjects**: formal and informal (country, region, non-state funds and organisations, markets, separate organisations, households (of families).
6. **According to the intensity of the influence**: intensive (internal resources of human capital are employed i.e., quality parameters) and extensive (by using quantitative parameters).
7. **According to the influence type**: direct (expressed by economic sizes: number of active people and their growth pace, education index and health status of the people) and indirect.

8. According to the results of the influence: positive and negative.

Considering the fact that human capital formation is influenced by various factors, some of the factors overlap among groups, whereas some act stronger than others and some weaker. The factors of human capital formation for different organisations can give rise to different levels and outputs of human capital. Therefore, it is important to create the system of factors affecting human capital formation and to evaluate these factors in logistics enterprises.

The system of factors affecting human capital formation

All the components of human capital are acquired and increased with the help of investments made by a family that believes such expenses will pay off in the future. Therefore, a family covers the expenses, necessary for the physical development of a person, expenses incurred due to the upbringing, which are called investments. To some extent, family investment into human capital depends on the development level of a country. The pre-school and school education, which are funded from the state and municipality budget, contribute to the human capital formation in the family.

A. A. Tsyrenova (2006) claims that the process of human capital formation is influenced by formal and non-formal socio-economic institutions, i.e. a country, region, non-state funds and organisations, markets, separate organisations, households (families) that determine the process of human capital formation. Households invest their funds and the work of parents in the first stage of human capital formation. They create conditions for human capital development, allocate a part of family budget for upbringing, education and health, carry out leisure and socialisation functions, encourage effective use of human capital in labour market.

Under current conditions, separate organisations, manufacturing structures, which actively form human capital through investments into qualification training and formation of work skills, play a vital role in the accumulation of capital, however only up to a point where they generate net profit. They are directly interested in increasing the productivity of their employees, reducing the work time lost due to illness or disability. In this process, the role of the state is expressed as a form of mandatory general education, as a motivational form of increasing income and as the formation of human capital. The state plays a significant role in the field of healthcare and education as well as in the process of accumulation and development of human capital.

Human capital is defined by distinguishing certain qualities, the use of which allows increasing the value. One of the main forms of human capital is knowledge (Kagochi & Jolly, 2010). Being the main element of human capital, knowledge is hard to evaluate, therefore the majority of scientists evaluate human knowledge based on the acquired education. However, human capital is not only the level of education reached by the person, but also an ability to use the acquired knowledge for the creation of economic value (OECD, 2001). The newest studies aim at revealing the qualitative factors of human capital, which are hard to notice and measure, yet influence work efficiency. Such factors include the norms of ethics, attitudes, values, culture, philosophy, etc. These studies attribute all the personal qualities which provide individual and/or collective benefit to human capital (Aleknavičiūtė, 2016).

Based on the opinions of the analysed authors, the system of factors, which determines the formation of human capital, can be created (Fig. 1).

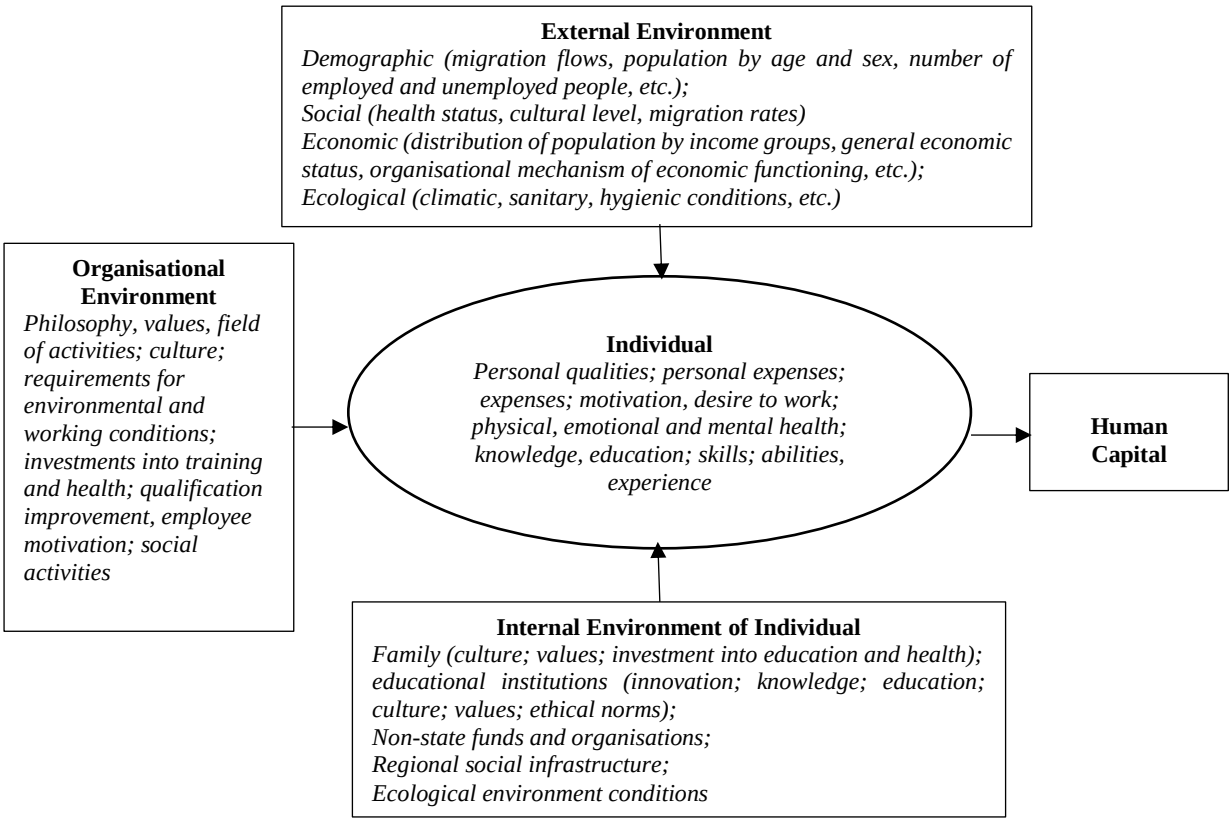

Figure 1. The system of factors affecting human capital formation

The formation of human capital is influenced by external environment, which includes social, economic, demographic, geopolitical, national cultural and other conditions in a country, as well as the internal environment of an individual, where family, educational institutions, other organisations, situation in a region form conditions for the growth of human capital. Organisation and its environment, field of activity, investments into qualification improvement, formation of work skills play a vital role in the formation of human capital. Individuals are significant to the formation of human capital as well, since every individual has different personal qualities, knowledge, skills and abilities, therefore human capital formation is greatly affected by individual abilities, expenses, motivation.

Empirical results of the study

In order to determine the factors that mostly affect human capital formation in logistics enterprises, a questionnaire survey was carried out. The respondents had to rate the importance of factors to the formation of human capital in logistics enterprises from 1 to 5 (1 = totally unimportant, 5 = very important). The factors of external environment, individual environment and organisational environment have been evaluated. The evaluation is provided in Table 1.

Table 1. The evaluation of factors affecting human capital formation

Factors	Average	Variance	Rank
I1. Demographic	3.923	0.410	13
I2. Social	4.000	0.167	12
I3. Economic	4.231	0.359	7
I4. Ecologic	3.231	0.692	17
IN1. Family	4.077	0.910	10
IN2. Educational institutions	4.385	0.423	3
IN3. Non-state funds and organisations	2.615	1.090	20
I**N4**. Regional social infrastructure	3.769	0.859	14
IN5. Regional ecological environment conditions	3.077	1.244	19
O1. Organisational environment	4.385	0.423	4
O2. Organisational philosophy	4.615	0.423	2
O3. Organisational values	3.462	2.103	16
O4. Organisational field of activity	3.769	0.692	15
O5. Requirements for environmental and working conditions in an organisation	4.077	0.910	11
O6. Organisational investments into training	4.385	0.756	5
O7. Organisational investments into health	3.231	1.026	18
O8. Organisational culture	4.308	0.897	6
O9. Qualification improvement in an organisation	4.154	0.474	9
O10. Employee motivation in an organisation	4.231	0.692	8
O11. Social activities in an organisation	4.615	0.256	1

It is observed (Table 1) that the respondents believe that out of the external environmental factors economic factors are the most and ecological factors are the least significant to the formation of human capital in logistics enterprises. In the group of internal environment of an individual, educational institutions have the greatest influence on human capital formation, while the activities of non-state funds and organisations are least significant. Organisational factors that affect human capital formation are qualification improvement and employee motivation.

Factors affecting human capital formation were compared by applying the analysis of variance ANOVA, which allows comparing various groups at once (Table 2).

Table 2. The results of ANOVA analysis of variance

ANOVA						
Source of Variation	***SS***	***df***	***MS***	***F***	***P-value***	***F crit***
Between Groups	73.919	19	3.890	5.254	1.47248E-10	1.630
Within Groups	177.692	240	0.740			
Total	251.611	259				

F value indicates whether there is a significant relationship between factors affecting the formation of human capital. Since the results of the analysis show that 5.254>1.630 (F>F crit), it can be stated that the relationships between variables are reliably related.

Having carried out the correlation analysis it was estimated that all the correlation coefficients are significant based on the Stjudent criterium (t) with a 0.95 probability and 0.05 significance level, which shows the existence of correlation relations. When evaluating the results of correlation analysis, some limitations of its application are to be taken into account. First of all, the correlation coefficient does not show its causation. Therefore, the relationship determined after carrying out the correlation analysis can be interpreted as a parameter of association or relationship and not as a causation.

When analysing the values of correlation coefficients (Table 3) it was observed that there is no linear relationship between social factors and educational institutions, organisation's field of activity, qualification improvement and

employee motivation in an organisation. Based on the data acquired when carrying out the correlation analysis it can be stated that very weak linear relationship exists between such factors of internal environment of an individual, as regional social infrastructure and ecological environmental conditions as well as organisational factors, whose correlation coefficients range from 0.021 to 0.227. It is also observed that the organisational field of activity has very weak linear relationship with factors of external environment and factors of internal environment of individual, and has average relationship only with educational institutions (0.453), therefore it can be stated that educational institutions are influenced by the organisational field of activity and affect the formation of skills and abilities of the required human capital (Table 3).

The data of correlation analysis have also revealed that there exists an average and strong linear relationship between demographic, social factors and family, since the influence of family on the formation of human capital depends on the demographic situation and social environment. Average relationship has been estimated between ecological factors and organisational investments into health, therefore it can be stated that ecological factors determine organisational investments into the healthcare of human capital

CONCLUSIONS

After analysing the aspects of the human capital theory in scientific literature, it can be stated that there are various interpretations of human capital; however, the majority of the authors agree that people should be associated to the conception of capital.

Factors that form human capital have been classified according to specific features and a factor system of human capital that is useful in distinguishing the groups of factors affecting human capital formation has been established

The analysis of the factors revealed that external factors that mostly affect the formation of human capital in logistics enterprises are economic factors, whereas ecological factors have the least influence. Concerning individual environmental factors, human capital formation is mostly affected by educational institutions and the least by activities of non-state funds and organisations. Organisational factors that influence human capital formation are qualification improvement in the organisation and employee motivation.

Data of the correlation analysis revealed that the strongest linear relationships exist between demographic and social factors and family, ecologic factors and organisation's investments to health sector, as well as organisational values and organisational culture; however, this relationship is non-existent or especially weak mostly among the environmental factors of an individual such as regional social infrastructure factors and ecological situation and organisation's factors as well as external environment factors and individual environment factors.

Correlation analysis revealed that there was a significant negative correlation between the factors of the external environment "Demographic" (such as migration, structure of population and others) and factor from the internal environment of the individual "Family" content; the correlation coefficient was -0.671. Moreover, the positive correlation was with the factor from the environment of the organisation "Culture" and "Value of organisation" (+0.695).

Taking these results into consideration, the focus should be drawn on transforming the function of human resources management as well as providing a facilitative environment for developing the necessary skills in the professional and technical field.

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Table 3. Correlation Coefficients between Factors of Human Capital Formation

	I1	I2	I3	I4	IN1	IN2	IN3	IN4	IN5	O1	O2	O3	O4	O5	O6	O7	O8	O9	O10	O11
I1	1,000																			
I2	0,319	1,000																		
I3	0,050	0,341	1,000																	
I4	-0,589	0,245	0,051	1,000																
IN1	-0,671	-0,642	-0,034	0,396	1,000															
IN2	-0,123	0,000	-0,033	-0,024	0,083	1,000														
IN3	-0,671	-0,391	-0,113	0,494	0,618	0,236	1,000													
IN4	0,248	0,440	-0,346	-0,141	-0,449	0,436	-0,013	1,000												
IN5	-0,458	-0,366	-0,154	0,339	0,542	0,300	0,743	0,099	1,000											
O1	0,477	0,314	0,395	-0,178	-0,186	-0,182	-0,132	0,021	-0,159	1,000										
O2	-0,036	0,491	0,617	0,444	-0,186	0,024	0,273	-0,075	0,021	0,332	1,000									
O3	0,283	0,428	0,258	0,186	-0,282	-0,052	-0,051	-0,167	-0,241	0,620	0,549	1,000								
O4	0,058	0,000	-0,025	-0,018	-0,139	0,453	-0,099	-0,087	-0,033	0,011	0,248	0,363	1,000							
O5	-0,099	-0,403	-0,095	0,129	0,411	-0,146	0,327	-0,471	0,499	0,234	-0,030	0,411	0,175	1,000						
O6	-0,095	-0,431	-0,429	-0,098	0,156	0,333	0,635	0,277	0,686	-0,073	-0,114	-0,028	-0,054	0,441	1,000					
O7	-0,160	0,296	0,109	0,660	0,234	-0,143	0,205	-0,201	0,200	0,229	0,213	0,488	-0,246	0,423	0,049	1,000				
O8	0,192	0,245	0,219	0,398	-0,129	0,130	0,111	-0,249	-0,021	0,130	0,565	0,711	0,328	0,327	0,114	0,515	1,000			
O9	-0,099	0,000	0,042	0,228	0,066	0,234	0,485	0,150	0,204	-0,019	0,563	0,066	0,175	-0,138	0,267	-0,055	0,228	1,000		
O10	-0,277	0,000	0,247	-0,130	-0,083	0,182	0,255	0,117	-0,071	-0,015	0,438	-0,083	0,283	-0,360	-0,062	-0,601	-0,284	0,525	1,000	
O11	-0,497	-0,422	-0,421	0,457	0,695	0,061	0,678	0,024	0,595	-0,204	-0,043	-0,269	-0,020	0,262	0,313	0,090	-0,165	0,489	0,116	1,000