THE IMPACT OF DISTANCE LEARNING ON THE EMOTIONAL CAPITAL OF HUMAN AND TEAM

Pereverzieva A.V., Volkov V.P.

Zaporizhzhia National University,
Ukraine, 69600, Zaporizhzhia, Zhukovsky str., 66
pereverzeva@ukr.net, volkovvp49@gmail.com
ORCID: 0000-0001-8391-6636, ORCID: 0000-0002-1270-895X

Key words:
emotional capital,
distance learning, interaction,
educational process, management,
social environment, team,
communication

The article is devoted to the study of the impact of distance learning on emotional capital, which determines interactivity levels between team members. The tools we offer are universal and can be used for various economic entities from macro- to micro level - enterprises, associations of people and others. The peculiarity of the approach to the department as to the team having intellectual work is characterized by the level of participation intensification in joint activities and projects. The emotional component is of paramount importance for a high interactivity level and is determined by the form of educational process organization. That is, a high level of emotional capital and interaction can determine the effectiveness of human resource management methods in the team and the level of its self-organization. The hypothesis of the study (H1) is the assumption that distance learning reduces emotional capital level. Methodology. The study methodology is emotional capital impact analysis, including the calculation of the coefficient. The interaction coefficient in a team indicates emotional capital. Some mathematical dependences have been used as analytical tools. Algorithm for calculating the interactivity level applying the example of the educational institution`s department, using online organization forms of the educational process and offline learning. Comparative analysis of team interaction under the specified conditions have been carried out. Results. It has been determined that online learning causes lower interaction level in comparison with offline organization of the educational process, which proves the decrease in emotional capital level. The methodological approach proposed in the study allows not only to quantify the interactivity level on the basis of the coefficient, but to identify "weaknesses" that reduce interaction level and "strengths", which are the prerequisite for successful team coexistence. The practical value of the obtained results is the ability to justify the use of the most effective forms of educational process` organization, to determine positive and negative outcomes for qualitative and quantitative indicators of management efficiency amid social distancing.

ВПЛИВ ДИСТАНЦІЙНИХ ФОРМ НАВЧАННЯ НА ЕМОЦІЙНИЙ КАПІТАЛ ЛЮДИНИ ТА КОЛЕКТИВУ

Переверзєва А.В., Волков В.П.

Запорізький національний університет
Україна, 69600, м. Запоріжжя, вул. Жуковського, 66

Ключові слова:
емоційний капітал,
дистанційні форми навчання,
взаємодія, освітній процес,
управління,
соціальне середовище,
колектив, комунікація

Стаття присвячена дослідженню впливу дистанційних форм навчання на емоційний капітал, що визначає ступінь взаємодії членів колективу. Запропонований нами інструментарій є універсальним і може бути використаний для різних економічних суб'єктів від макро- до мікрорівня – підприємств, об'єднань людей та інші. Особливість використання цього підходу до такого колективу як кафедра полягає в тому, що для колективу з інтелектуальним характером праці, що характеризується рівнем активізації участі у спільних заходах і проектах. Емоційна складова має провідне значення для високого рівня взаємодії та обумовлюється формою організації освітнього процесу. Тобто високий рівень емоційного капіталу та взаємодії може визначати ефективність методів управління людськими ресурсами у колективі та рівня його самоорганізації. Гіпотезою дослідження (H1) є припущення, що дистанційні форми навчання зменшують ступінь

емоційного капіталу. Методологія дослідження впливу дистанційних форм навчання на емоційний капітал передбачає розрахунок коефіцієнту взаємодії k_{int}. Коефіцієнт взаємодії в колективі є індикатором емоційного капіталу. Як аналітичний інструментарій використано певні математичні залежності Побудовано алгоритм розрахунку рівня взаємодії на прикладі колективу кафедри освітнього закладу за умови використання онлайн форм організації освітнього процесу та офлайн навчання. Здійснено порівняльний аналіз взаємодії в колективі за зазначених умов. Визначено, що за умови використання онлайн форм навчання рівень взаємодії є меншим, ніж за умови офлайн форм організації освітнього процесу, що доводить зниження ступеня емоційного капіталу. Запропонований у дослідженні методичний підхід дозволяє не лише кількісно визначити рівень взаємодії на основі розрахованого коефіцієнта, але виокремити «слабкі» місця, які знижують рівень взаємодії та «сильні» позиції, що є передумовою для успішного співіснування в колективі. Практична цінність отриманих результатів полягає в можливості обґрунтування доцільності використання найбільш ефективних форм організації освітнього процесу, визначати позитивні та негативні наслідки щодо якісних та кількісні показники ефективності управління в умовах соціальної дистанційності.

Problem statement

Modern education affected by socio-economic changes requires constant improvement of education forms to support high development rate and achieve harmonious team cooperation.

COVID-19 pandemic is one of the key challenges, which has affected all countries around the world, regardless of geopolitical position and level of economic development. Educational sector which is in a continuous process of development, is in a critical situation. It is impossible to postpone or stop learning, so it is necessary to maintain the achieved level of training quality. Distance forms of learning with the help of information and communication technologies have become effective means of ensuring the continuity of educational process.

Distance learning is interaction between participants of the educational process, which involves typical components of traditional methods, and information and communication technologies as well.

Analysis of recent studies and publications

In the scientific literature there are different views on the advantages and disadvantages of distance learning. Scholars [1] state the positive impact of online forms of educational process, which involve modern information and communication technologies, which improve the quality and effectiveness of learning. Conclusions reached by scientists [2] are considered as significant results. They have proved that those participants of educational process who use all the possibilities of information and communication technologies were able to increase personal development (18.5%), deepen professional skills (18,7%), keep and strengthen health (10%).

There is a diametrically opposed position referring to the impact of distance learning on various areas of human life, including emotional capital. Researchers [3] have proven that online learning has a negative impact on the quality and effectiveness of knowledge acquisition. Statistical analysis showed that 59% of respondents believe that distance learning technologies have negatively affect the quality of education and 66%, respectively, the effectiveness of the educational process. The position is supported by scholars [4], whose study showed that more than 50% of educational process' participants showed low level of satisfaction with the organization and implementation of the online educational process. There is another important conclusion – distance learning could reduce stress levels. In addition, online learning has changed attitudes towards the lifestyle and consumption (higher consumption of caffeine and energy drinks, high-sugar foods and fast food), sleep (reduced hours of sleep), lower physical activity and bad habits. This ultimately has a negative effect on physical and psychological health [5].

Objectives of the article

The study objective is to determine the impact of distance learning on emotional capital, which determines interactivity levels between team members.

The main material of the research

Based on the above mentioned, one can summarize that the positive features of distance learning are the ability to obtain more knowledge and skills, learning process flexibility, lower costs of educational process' organization. Disadvantages of distance learning include: significant time for doing homework, negative impact on physiological state and mental health of a person, due to the lack of «live» communication between the participants of educational process.

Distance learning provides communication between the subjects of educational process, its continuity and quality, but reduces the level of emotional capital, the ability to use emotions to achieve certain goals and to create interaction between people.

Thus, emotional capital is the highest point of emotional intelligence, determined by tangible and intangible benefits. Management system reveals that the ability to manage team emotional capital increases the overall performance, reduces the probability of conflicts and forms the potential for its further development. Emotional capital is vital for

the assessment of intangible motivation efficiency, which is extremely important for a modern successful creative employee.

Daniel Goleman [6] paid considerable attention to the study of emotions', emotional intelligence's and emotional capital's impact on the effectiveness of economic entities' performance. He defined the main competencies of emotional intelligence as the ability to identify, evaluate and control his/her own emotions, other people's emotions and emotional state of a team.

Based on the abovementioned, we conclude that emotional capital is an integral indicator of the degree of interaction between members of a particular group. In the field of higher education, it can be a student group, department staff, the interaction «teacher-students» and the interaction «management-teachers».

Personal interaction plays a key role in a team, because: it makes it possible to perform tasks and achieve goals that are unattainable for one person, but are achievable only in case of institutional energy accumulation; there is a long term interaction stability, taking into account emotional intelligence to increase the effectiveness of collective actions and create prospects for the future; there is synergetic effect determined due to interaction by additional outcomes and benefits caused by the process' intensification.

The system approach proves that the issues of coexistence and interaction of people within a certain system become especially important, because the quality of this interaction affects system's success and its development in the future. Any system has a certain set of elements that interact with each other. The result of this interaction is achieved on the basis of its full strength, rather than of its parts' capacity.

As a result of the interaction of system elements is the achievement of a certain synergistic effect, which shows the nature and strength of the interaction of the system elements, for example, of human resources within a team. The synergistic effect can have both positive and negative results, i. e. it characterizes the direction of the interaction vector. The interaction strength directly affects system development, i. e. the stronger its elements are connected through the possibility of coexistence, the greater the probability of their successful development.

Only a positive synergetic effect should be achieved for a team, as it impacts collective's ability to achieve common goals and determines the opportunities for future development. It should also take into account the features of different teams' actions. For example, the nature of work, (mental or manual), age, number of employees, etc.

In case the negative impact of synergies has been revealed, it is necessary to develop strategy to increase the interaction effect of human resources within the team. The strategy development aimed to enhance the interaction of human resources is an integral part of the process of managing the socio-economic system, i. e. the department staff.

We have conducted a study of the distance learning impact on emotional capital changes by calculating the coefficient of interaction applying a team as an example – the department of a higher education institution. The analysis is based on the results obtained before shifting to distance learning (online) when traditional educational technologies were used (offline).

Mathematical dependences have been applied by us as an analytical tool to calculate the coefficient of interaction. The algorithm has been developed; it involves the following steps: list of scientific, social and cultural activities of a structural unit; assessment of team members' participation in individual activities by the proposed scale; mathematical calculations to determine the coefficient of interaction of team members.

Let us consider in detail the algorithm steps for assessing the interactivity level of a university department staff, assuming 1) offline educational process and 2) online educational process.

The coefficient of interaction (k_{int}) could be used for the quantitative assessment of the interactivity level of human resources within the stud. It has a synergistic effect on team's functioning and development. The coefficient is a multiplier of team members' interactivity level, i. e. it can be either increased (enhanced) through collective cooperation, or decreased (weakened) in case of conflict culture, which largely depends on emotional capital. The strength or quality of this interaction causes a synergistic effect.

Let us study in more detail the sequence of the algorithm implementation. Let us choose the list of N activities (d_i) in which team members can participate, and characterize the quality of interaction. Participation in each event will be assessed according to the scale determined by the indicator d_i.

Total coefficient of interaction is determined by the formula:

$$k_{int} = 1 + \frac{\sum_{i=1}^{N} d_i}{N}, \qquad (1)$$

where $d_i = [-1;0]$; 1 – there is an event and team members take part in it; 0 – there is an event and team members do not take part in it; –1 – there is no such an event.

When determining the coefficient of interaction within the team, we will take into account the number of participants in an event.

Total coefficient of interaction, taking into account the number of participants will be:

$$k_{int} = 1 + \overline{Q_{HR}} \times \frac{\sum_{i=1}^{N} d_i}{N}, \qquad (2)$$

where $\overline{Q_{HR}}$ – mean value of the department teachers' ratio who took part in an event

$$\overline{Q_{HR}} = \sqrt[m]{\prod_{j=1}^{m} \frac{p_j}{p}}, \qquad (3)$$

where p – total number of a department staff, persons; p_j – number of department staff who took part in the event, persons; m – number of events, for which $d_i = 1$.

Let us analyze the example of calculating the coefficient of interaction for a department in terms of offline and online mode of educational process. Data which illustrate participation of the department members in the activities amid offline mode of educational process are presented in Table 1 and online – in Table 2. The department staff selected for the study includes 12 people. Note that the

team is balanced in terms of age and gender equality. We have identified 4 main events for staff members' participation, including: scientific projects, conferences, sport competitions, various joint projects and joint events (birthday parties, concerts, picnics and shared recreation).

We determine the coefficient of interaction for a structural unit's team – offline and online modes of educational process:

– offline mode of educational process:

$$k_{e3} = 1 + 0{,}786 \times 0{,}8 \approx 1{,}63;$$

– online mode of educational process:

$$k_{e3} = 1 + 0{,}376 \times 0{,}68 \approx 1{,}23.$$

The calculation results are presented in the Table 3.

Calculations of the coefficient of interaction presented in table 3 clearly show that the level of cohesion of the department staff amid offline mode of educational process is higher (1.63) than amid online mode (1.23). The calculated coefficient makes it possible to assess a set of activities that would facilitate team members' participation in joint activities and achievement of a common goal by them.

Conclusions

The calculations confirmed hypothesis H1 and proved that distance learning modes reduce the level of emotional capital. The team coefficient of interaction amid traditional modes of learning is 1.63, and amid distance modes of learning is 1.23. This confirms lower level of communication in a team and the reduction of emotional capital.

The study results have showed that the existing modes of distance learning using modern information and communication technologies: first, reduce the intensity of accumulating new knowledge due to the lack of emotional component, which is formed in the process of traditional modes of learning application and personal communication; 2) there is a need for new ways of organizing the educational process by combining online and offline communication between participants of educational process – both teachers and students.

The main value of this study is the ability to disseminate the results and methods of calculation for the interactivity level in different forms of labour organization and the emotional component for any socio-economic actors. These can be businesses, individual business departments and associations of people. Based on the obtained results, it is possible to develop effective measures that will increase the interactivity level and thus create a positive synergistic effect.

Additional significance of this study is to substantiate the idea of the conditional dependence of the interactivity

Table 1 – Data of a «department staff» to determine of the coefficient of interaction
when shifting to distance mode of educational process (offline)

Activities	d_1	Number of structural unit`s team members (*HR*), persons	Amount of human resources, participated in the event (*HR*₁), persons	
Column 1	Column 2	Column 3	Column 4	
			persons	ratio
1. Participation in scientific projects	1	12	10	0,833
2. Participation in conferences	1	12	11	0,917
3. Sport competitions	0	–	–	–
4. Joint projects	1	12	8	0,667
5. Joint events: holidays, concerts, picnics	1	12	9	0,75
Geometric mean value	0,8	–	–	0,786

Source: Made by the authors themselves

Table 2 – Data of a «department staff» to determine of the coefficient
of interaction when shifting to distance mode of educational process (online)

Activities	d_1	Number of structural unit`s team members (*HR*), persons	Amount of human resources, participated in the event (*HR*₁), persons	
Column 1	Column 2	Column 3	Column 4	
			persons	ratio
1. Participation in scientific projects	1	12	5	0,417
2. Participation in conferences	1	12	7	0,583
3. Sport competitions	-1	–	–	–
4. Joint projects	1	12	7	0,583
5. Joint events: holidays, concerts, picnics	-1	–	–	–
Geometric mean value	0,6	–	–	0,376

Source: Compiled by the authors

Table 3 – Calculation of the coefficient of interaction for different modes of educational process(offline and online)

Coefficient of interaction	Value
k_{e3} (offline)	1,63
k_{e3} (online)	1,23

Source: calculated by the authors themselves

level on the emotional component, which determines the possibility of coexistence in one group.

The importance of the study is also determined by the fact that it allows to quantify the coexistence of people in the same structure, which are combined not only by objective characteristics, but also taking into account the emotional component. Moreover, the results allow a business entity to redistribute financial costs, reorient efforts and direct them to increase the level of cohesion and interaction in a team, support emotional intelligence to disseminate positive synergistic effect on the deliverables.

Thus, in our opinion, the most successful mode of educational process' organization is mixed one, namely: online mode for lectures and offline mode for practical classes.

References

1. Rueda S., Adan R., Martinez C., Ortega R., Madrigal G. Educators' opinion about technology and web platforms during the Covid-19 pandemic. *Revista gestion de las personas y technologia*. 2021. Vol. 14(40). P. 21–37. [in English]
2. Garanina S., Stepenko V., Troyanskaya M. Information society and its impact on personality development. *Education and information technologies*. 2021. URL: https://pubmed.ncbi.nlm.nih.gov/33903796/ [in English]
3. Hassell L., Peterson J., Pantanowitz L. Pushed Across the Digital Divide: COVID-19 Accelerated Pathology Training onto a New Digital Learning Curve. *Academic pathology.* 2021. Vol. 8. URL: https://pubmed.ncbi.nlm.nih.gov/33709031/ [in English]
4. Abushammala M., Qazi W., Manchiryal R. The impact of COVID-19 on the private higher education system and students in Oman. *Journal of university teaching and learning practice*. 2021. Vol. 18(3). URL: https://ro.uow.edu.au/jutlp/vol18/iss3/013/ [in English]
5. Elsalem L., Al-Azzam N. Stress and behavioral changes with remote E-exams during the Covid-19 pandemic: A cross-sectional study among undergraduates of medical sciences". *Annals of medicine and surgery*. 2021. Vol. 60. 2021. P. 271–279 [in English]
6. Goleman D. Emotional Intelligence. New York : Bantam Books, 1995. 352 p. [in English]
7. Pereverzieva A.V., Volkov V.P. Impact of human resources` "energy" on the development of business entities. *Baltic Journal of Economic Studies*. 2018. Vol. 4. № 2. P. 159–168. [in English]
8. Pereverzieva A.V., Volkov V.P. A methodical approach to the assessment of human resources` interactions. *Journal of Entrepreneurship, Management and Innovation (JEMI)*. 2019. Vol. 15. Is. 1. P. 171–204. [in English]