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Conceptual Model for the Development of Employee Competencies Through the Well-Being Implementation

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ABSTRACT

Modeling the process of developing employee competencies and assessing their impact on an organization's performance is an urgent task. The study aims to develop a unified concept for modeling the process of employee competency development by implementing a corporate well-being program to achieve the workers' target KPIs. The study consisted of two stages – modeling and a survey. A database on the components of the model is formed based on a survey of 727 individuals from different companies and economic sectors. The model is tested by means of preliminary analysis of the collected data, their clustering, assessment of interrelations of components, and systematization of the existing regularities. Fuzzy clustering of values, well-being elements, and individuals is constructed on multidimensional samples. Estimates of the probabilities of elements' transitions from clusters by values to clusters by activities and vice versa are obtained. The fuzzy clustering algorithm is developed in Python. The results show that for employees with a less pronounced value model, the well-being program in the company is of medium importance. Conversely, the well-being program in the company is of high importance for employees with prevailing social values. Employee clustering can suggest several propositions for the most efficient activities of the corporate well-being program according to the envisioned generalized employee value model. Conversely, it can help determine a candidate's optimal value profile for them to work effectively in the organization proceeding from the current corporate well-being program.

1. INTRODUCTION

1.1 Research background

There is no denying that the world community has been going through a continuous transformation of socio-economic processes in recent years. The changes affect the operation of all institutions, from social to economic. Many organizations have already reformatted their strategic vector of development to focus on the real needs of end consumers (i.e., the product approach has been integrated into their business processes), which is necessary to create products that are in real demand in the market. People are the primary resource for creating such products in the first place.

Organizations increasingly often choose the system of short-term planning where indicators and their target values are defined for one calendar year and the roadmap of measures to achieve them is revised quarterly. In this case, the primary issues identified by company management as part of planning are, on the one hand, the difficulty of assessing the input of each employee into the result and, on the other hand, establishing the components of the corporate environment that would be able to ensure maximum employee productivity. The challenge of answering these questions also lies in the fact that in addition to physical factors, the work of each individual is affected by psychological factors (meaning that an employee who is fully fit for their position and has been delivering the desired results in the past may now be entirely ineffective, for example, because of their emotional instability due to burnout).

Considering the above, we analyzed recent studies devoted to the processes of human capital development (including by means of well-being programs) and the assessment of their impact on an organization's performance.

1.2 Employees' competencies and their human capital

A considerable number of studies examine the issues of developing both employees' competencies and their human capital in the context of the transition to the fourth industrial revolution. Salman et al. [1] evaluate the influence of investment in various human resource management methods on the development of employee competencies. A study by Karpov et al. [2] proposes approaches to creating an educational environment in an organization for the development of its human capital. Rudyk et al. [3] investigate the primary issues in the advanced training and improvement of professional competencies among service industry enterprises. Loyalka et al. [4] analyze the effect of professional education and retraining on the development of human capital in China. A paper by Biao [5] proposes the concept of lifelong learning and analyzes its influence on human capital development. Several works examine the impact of the specifics of the corporate culture at an enterprise on various

aspects of employees' work, for instance, innovative activity [6, 7] or commitment to an organization [8]. Of note is research dedicated to analyzing the competency-based approach within Industry 4.0 [9]. The impact of an organization's corporate well-being system on its employees is now understood relatively poorly. Specifically, van Hierden et al. [10] propose an electronic healthcare model as an element of a well-being system. A study by Click and Dobbins [11] presents an analysis of the relationship between the elements of the well-being system and the level of financial literacy in staff.

1.3 Effect of employees' competencies on the efficiency and productivity of individual business units and an organization

The next block of research concerns the assessment of the effect of employees' competencies (or human capital) on the efficiency and productivity of both individual business units and an organization. In this line of research, Sivakalyan Kumar and Bhanu [12] analyze relationships between the competencies of a particular employee and the work performed by them. Studies by Ateke and Nwulu [13] and Otoo and Mishra [14] are aimed at determining the relationship between the development of employee competencies and a company's organizational stability and efficiency. Nair et al. [15] explore the influence of leadership competencies (cognitive, emotional, and social intelligence) on employee performance. A study by Saleh [16] investigates the impact of motivational variables on employee performance in higher education. Rizka et al. [17] analyze employee efficiency by studying the effects of transformational leadership, employee engagement, and readiness for change. A study by Sakthi and Akila [18] assesses the effect of employees' emotional competencies on their labor performance. An article by Mariyani et al. [19] addresses causal relationships between HR-unit competencies, organizational culture, and employee performance.

1.4 Implication of Employee Burnout on their Productivity and Efficiency

It is worth noting separately several works concerning the implication of employee burnout on their productivity and efficiency. Iriani et al. [20] analyze the impact of leadership style, various rewards, and competencies on employee performance through the prism of employee job satisfaction. Kim and Jung [21] explore the influence of organizational culture and employee competencies on perceived stress, which has a negative physical and psychological effect on employees. A study by Daguplo et al. [22] evaluates the influence of the competencies of public institution employees on their satisfaction.

In previous studies, we considered the aspects of human capital development at various levels. Our 2020 paper [23] presents an economic-mathematical optimization model for the formation of regional project portfolios to achieve the strategic goals of a region's development. Another study published in 2017 [24] proposes a model for forming a plan of corporate activities aimed at the development of human capital at a university.

It should be noted that the gap in the current research, which our research aims to address, is the following drawbacks of the currently available instruments, which diminish the efficiency of the corporate system of employee development and thereby narrow an organization's growth opportunities:

- ❖ the methods do not consider the multi-period nature of the process of developing employee competencies through the formation and implementation of corporate activities (including as part of the well-being program) and the possibility of rolling planning;
- ❖ there is a lack of attention to the optimization aspects of creating a set of corporate activities (including those within the well-being program) that directly or indirectly affect the components of an organization's performance and efficiency by developing the competencies of its employees, considering the process of employee burnout;
- ❖ uncertainties and risks are not fully accounted for when making decisions on the methods and elements of developing employees' competencies;
- ❖ the impact of the formation and implementation of corporate activities (including those under the well-being program) on employee burnout is understudied;
- ❖ the impact of the formation and implementation of certain elements of an organization's corporate well-being program on the development of employees' competencies is not described to the full extent;
- ❖ the impact of certain employee competencies (including considering the burnout process) on certain components of an organization's performance and efficiency is not fully characterized.

In view of the above, we can conclude that there is a deficit of much-needed instruments. These tools are required, first, to describe the influence of various corporate policy components on the development of employees' competencies and, as a result, on their performance and the efficiency of an organization overall. Second, these instruments must enable a company to determine the optimal set of measures to develop employees' competencies and reduce their level of burnout and, as a result, to make maximum progress towards achieving the target key performance indicator values of both individual employees and an organization at large.

1.5 Purpose and objectives of the study

The study aims to develop a unified concept for modeling the process of employee competency development by implementing a corporate well-being program to achieve the workers' target KPIs.

For the purposes of achieving the goal of the study, the following research objectives were formulated:

– to develop a conceptual model for the development of employees' competencies that enable them to obtain the target KPIs by means of implementing the optimal portfolio of activities within the corporate well-being program, considering a quantitative assessment of employee burnout;

– to analyze the compiled database in terms of fuzzy clustering of individuals' values, well-being elements, and individuals by multidimensional samples of values and activities, as well as estimating the probabilities of the transition of elements from clusters by values to clusters by activities.

The model actualizes the concepts of a corporate well-being program, values, competencies, burnout, and KPIs. The sets of activities in the well-being program, competencies, values, and KPIs of employees are clarified. A method is proposed for quantitative assessment of employee burnout. The study also describes the relationships between different components of

the model: the cost of implementation of well-being program activities, employee competencies, values, engagement, loyalty, satisfaction, and workers' KPIs.

2. METHODS

2.1 Study design

The study consisted of two stages – modeling and a survey. As part of the present research, a conceptual model for the development of employees' competencies was developed to achieve the target values of their KPIs through the formation and implementation of an optimal corporate well-being program considering employee burnout.

At the core of the conceptual model are:

- ❖ interpretations of the concepts of a corporate well-being program, values, competencies, burnout, and KPIs;
- ❖ a refined list of 29 activities within the well-being program that accounts for its impact on the employee's physical and emotional well-being;
- ❖ a refined set of 20 employee competencies that consider the multifaceted nature of the employee and a method for their assessment;
- ❖ a refined set of 10 employee values that consider the various aspects of the employee's motivational processes and a method for their assessment;
- ❖ a method for assessing the level of employee burnout as expressed in terms of employee satisfaction, engagement, and loyalty;
- ❖ a refined set of six unified KPIs for an employee, which can be used regardless of the functional orientation of the unit in which they work;
- ❖ a description of interdependencies between all its components.

2.2 Conceptual model for the development of employee competencies through the implementation of a corporate well-being program

The study examined a multi-period dynamical problem in which time $t = 0.1,\ldots,T$, where T is the number of quarters in the planning horizon. At each time point t the organization invests financial resources into various measures as part of the corporate well-being program that directly or indirectly influence the development of employees' competencies or reduce their burnout at time point $(t + 1)$. In this, employee competencies at time point t affect both the attainment of critical KPIs by employees and a company at time point t. An important aspect of the issue is that in commercial organizations achieving the target values of their KPIs at time t has a direct impact on the amount of financial resources invested in the program at time $(t + 1)$.

Under employee competencies, we understand their inherent abilities or acquired knowledge, abilities, and skills that in aggregate ensure the efficient and rational functioning of staff as a production factor of development. For the purposes of this study, the list of competencies was actualized and systematized as follows:

1) "analytical ability" group: systemic thinking (j = 1), creative thinking (j = 2), and critical thinking (j = 3);
2) "communicability" group: empathy (j = 4), logicality of presentation (j = 5), and presentation skills (j = 6);
3) "learning ability" group: emphasis (j = 7), arithmetic ability (j = 8), and memorization (j = 9);
4) "team leadership" group: ability to motivate (j = 10), delegation skills (j = 11), and control skills (j = 12);
5) "hardiness" group: stress-resistance (j = 13), adaptability (j = 14), and self-reflection (j =15);
6) "self-management" group: proactiveness (j = 16), ambitiousness (j = 17), and diligence (j = 18);
7) "professionalism" group: process skills (j = 19) and project skills (j = 20).

Each employee of the organization is assigned the following vector function:

$$X_i(t) = \left(x_{i1}(t), \ldots, x_{i20}(t)\right),\ i = 1, \ldots, N$$

where, $x_{ij}(t)$ is the level of mastery of competency j by the i-th employee at time t; N is the number of employees.

In our study, $x_{ij}(t)$ is taken as a fuzzy variable showing the level of an employee's mastery of a competency. The value of this variable is determined using verbal assessments. For the linguistic variable Y_1 = <level of employee's mastery of the competency>, the term-set can be written as $V(Y_1)$ = {absent; minimal; low; average; high; very high}. The functions of affiliation are given in the form of fuzzy numbers: W(absent) = {0; 0; 0; 1}; W(minimal) = {0; 0; 1; 2}; W(low) = {0; 1; 2; 3}; W(average) = {1; 2; 3; 4}; W(high) = {2; 3; 4; 5}; W(very high) = {3; 4; 5; 5}.

Within the framework of the conceptual model, the development of competencies was carried out through the implementation of measures under the well-being program. A well-being program is part of an organization's corporate culture that seeks to create and further develop favorable working conditions that allow an employee to feel comfortable and unlock their potential. The list of well-being program measures was updated and systematized within the framework of this study:

1) "financial well-being" group: realization of corporate benefits (k = 1), optimization of financial behavior (k = 2), and realization of financial potential (k = 3);
2) "social well-being" group: integration of a company into the employee's family life (k = 4), integration of the employee into a company's corporate life (k = 5), integration of the employee into industry processes (k = 6), and integration of the employee into world processes (k = 7);
3) "career well-being" group: implementation of career maps (k = 8) and implementation of the talent management system (k = 9);
4) "mental well-being" group: organization of proper nutrition (k = 10), physical activity (k = 11), healthy sleep and rest (k = 12), meditation practices (k = 13), and the development of healthy habits (k = 14);
5) "continuous development" group: internal development of SOFT competencies (k = 15), external development of SOFT competencies (k = 16), internal development of HARD competencies (k = 17), external development of HARD competencies (k = 18), and P2P development (k = 19);
6) "employee-friendly environment" group: meaning management (k = 20), elimination of information vacuum (k = 21), development of communication freedom (k = 22), formation of a logical organizational structure (k = 23), development of territorial flexibility (k = 24), formation of adaptive work processes (k = 25), development of work-life balance (k = 26), development of technological and team leadership (k = 27), introduction of modern technologies (k =

28), and realization of an active corporate life (k = 29).

It was presumed that on a quarterly basis, an organization invests financial resources in the implementation of the program measures to develop employees' competencies. In this case, a decision on the total amount of investments to be allocated for the implementation of the program over the time interval [*t*; *t* + 4] is made once at time point *t*. For commercial organizations, it is defined as a share β of its annual profit, and for non-profit organizations – as a specific budget for employee development.

In turn, the value of change in the employee's competency at time point (*t* + 1) depends on the structure of investment directed toward the realization of measures as part of the well-being program at time point *t* and is established through the following equation:

$$x_{ij}(t+1) = x_{ij}(t) + \Delta x_{ij}(t)$$
$$\Delta x_{ij}(t) = f_j\left(x_{ij}(t), z_1\ (t), \ldots, z_{29}(t)\right)$$

where, $\Delta x_{ij}(t)$ is change in the level of mastery of competency *j* by the *i*-th employee at time point *t* as a result of measures implemented under the well-being program; $z_k\ (t)$ is the amount of financial resources allocated for the implementation of the *k*-th measure of the corporate well-being program at time *t* (in ths. rubles); *k* is the number of measures implemented under the well-being program.

An employee advances in achieving their KPIs by virtue of possessing specific competencies. In this connection, the development of competencies becomes the main tool for increasing their productivity and labor efficiency and, therefore, for increasing their performance results expressed in KPIs. Within the framework of this study, we proposed a unified list of employee KPIs (y_{ip}):

1) "process realization" group: deviation in terms of realization of business processes defined within the framework of the SLA (*p* = 1); evaluations based on feedback from process users (*p* = 2);

2) "realization of transformation" group: the number of transformations realized as part of business processes (*p* = 3); financial effect from changes in business processes (*p* = 4); change in the terms of realization of business processes defined within the SLA as a result of their transformation (*p* = 5); change of evaluations based on feedback from the users of business processes as a result of their transformation (*p* = 6).

When building functional dependencies of the influence of an employee's competencies on their KPI values, it was necessary to identify the reasons why the same employees with the same level of competencies and unchanged business processes at different time points bring different results to an organization as expressed in their KPI. In this study, we hypothesized that the efficiency and effectiveness of the employee's labor is influenced by the degree of their burnout. The degree of employee burnout is understood here as the physical and emotional state of the worker that directly or indirectly affects their speed and number of mistakes in realizing the business processes they are responsible for. As an assessment of the degree of employee burnout we used three a_{li} indicators:

1) satisfaction ($l = 1$) – a measure of the employee's satisfaction with their job and work environment;

2) engagement ($l = 2$) – a measure of the employee's interest in the results of their work and achieving a company's strategic goals;

3) loyalty ($l = 3$) – a measure of the employee's readiness to self-realization in a company given the wishes and requirements imposed by it.

These indicators were determined by means of a questionnaire survey of an organization's employees. Their assessment was performed on a 100-point scale. The extent of burnout of the *i*-th employee at time *t* was calculated as follows:

$$a_i(t) = \frac{1}{3} \cdot \left(a_{1i}(t) + a_{2i}(t) + a_{3i}(t)\right)$$

where, $a_i(t) = [0;\ 20)$ is severe burnout of the *i*-th employee at time point *t*; $a_i(t) = [20;\ 40)$ is burnout of the *i*-th employee at time point *t*; $a_i(t) = [40;\ 60)$ is the *i*-th employee being close to burnout at time point *t*; $a_i(t) = [60;\ 80)$ is the *i*-th employee being motivated at time point *t*; $a_i(t) = [80;\ 100]$ is the *i*-th employee being maximally motivated at time point *t*.

In studying the nature of employee burnout, we developed a hypothesis that this phenomenon stems from the diversion of employees' expectations about a company's corporate and work policies from reality (in this study, this implies the gap between reality and employees' expectations about the elements of the well-being program implemented at a company). Thus, the functional dependence of the indicators of satisfaction, engagement, and loyalty of the *i*-th employee on the divergence of their expectations from reality at time point *t* can be expressed as follows:

$$a_{li}(t) = g_{li}\left(\left(b_{i1}(t) - \hat{b}_1(t)\right) \cdot \frac{\alpha_{i1}(t)}{5}, \ldots, \left(b_{ik}(t) - \hat{b}_k(t)\right) \cdot \frac{\alpha_{ik}(t)}{5}\right)$$

where, $b_{ik}(t)$ is assessment of the *i*-th employee's expectations about the presence of the *k*-th measure of the well-being program at a company at time point *t* (discrete value: 0 – the presence of the activity is unimportant to the employee; 1 – the presence of the activity is important); $\hat{b}_k(t)$ – assessment of the factual realization of the *k*-th activity under the corporate well-being program at time point *t* (discrete value: 0 – the activity is implemented; 1 – the activity is not implemented); $\alpha_{ik}(t)$ – importance of the *k*-th activity of the well-being program being organized at a company for the *i*-th employee at time point *t*, $\alpha_{ik}(t)$ being a fuzzy variable.

Importantly, the presence of one or another activity within the corporate well-being program at a company is indicated here by the direction of investment towards its implementation.

In the framework of this study, it is assumed that employees' expectations about the presence of activities in an organization do not depend on their value models. Employee values are understood as their highest goals in life. All values are inherently immaterial, and any material component is but a means to achieve them. In this work, we propose a unified list of employee values:

1) freedom (*r* = 1) – the individual's striving for self-determination, independent action and thinking;

2) family (*r* = 2) – preservation and improvement of the well-being of the individual's loved ones;

3) enjoyment (r = 3) – the individual's striving for personal moral and physical satisfaction;

4) security (r = 4) – enhancing the security of the individual's important interests from internal and external threats;

5) power (r = 5) – the individual's striving for control and dominance over people and resources;

6) tradition (r = 6) – preservation and transmission of the norms, rules, and customs that have historically developed in the individual's environment;

7) achievement (r = 7) – the individual's striving for personal success owing to their personal and professional skills;

8) future (r = 8) – the individual's participation in the creation of the modern world built on the principles of equality, environmental friendliness, etc.;

9) socialization (r = 9) – the individual's striving for integration into their social environment through compliance with its social expectations and norms;

10) asocialization (r = 10) – the individual's striving for the assimilation of antisocial norms, attitudes, and stereotypes of behavior.

In this way, the functional dependence of the i-th employee's expectations about the presence of the k-th measure of the corporate well-being program at a company at time point t on the values of the i-th employee at time point t can be expressed as follows:

$$\alpha_{ik}(t) = h_k\big(d_{i1}(t), \ldots, d_{i10}(t)\big)$$

where, $d_{ir}(t)$ is assessment of the importance of value r for the i-th employee at time point t, $d_{ir}(t)$ being a fuzzy variable; r is the number of employee values.

Considering the above, the functional dependence between the value of the p-th KPI indicator of the i-th employee at time point t and the values of their competencies with consideration of burnout level can be expressed as follows:

$$y_{ip}(t) = q_p\big(x_{i1}(t), \ldots, x_{i20}(t), a_i(t)\big)$$

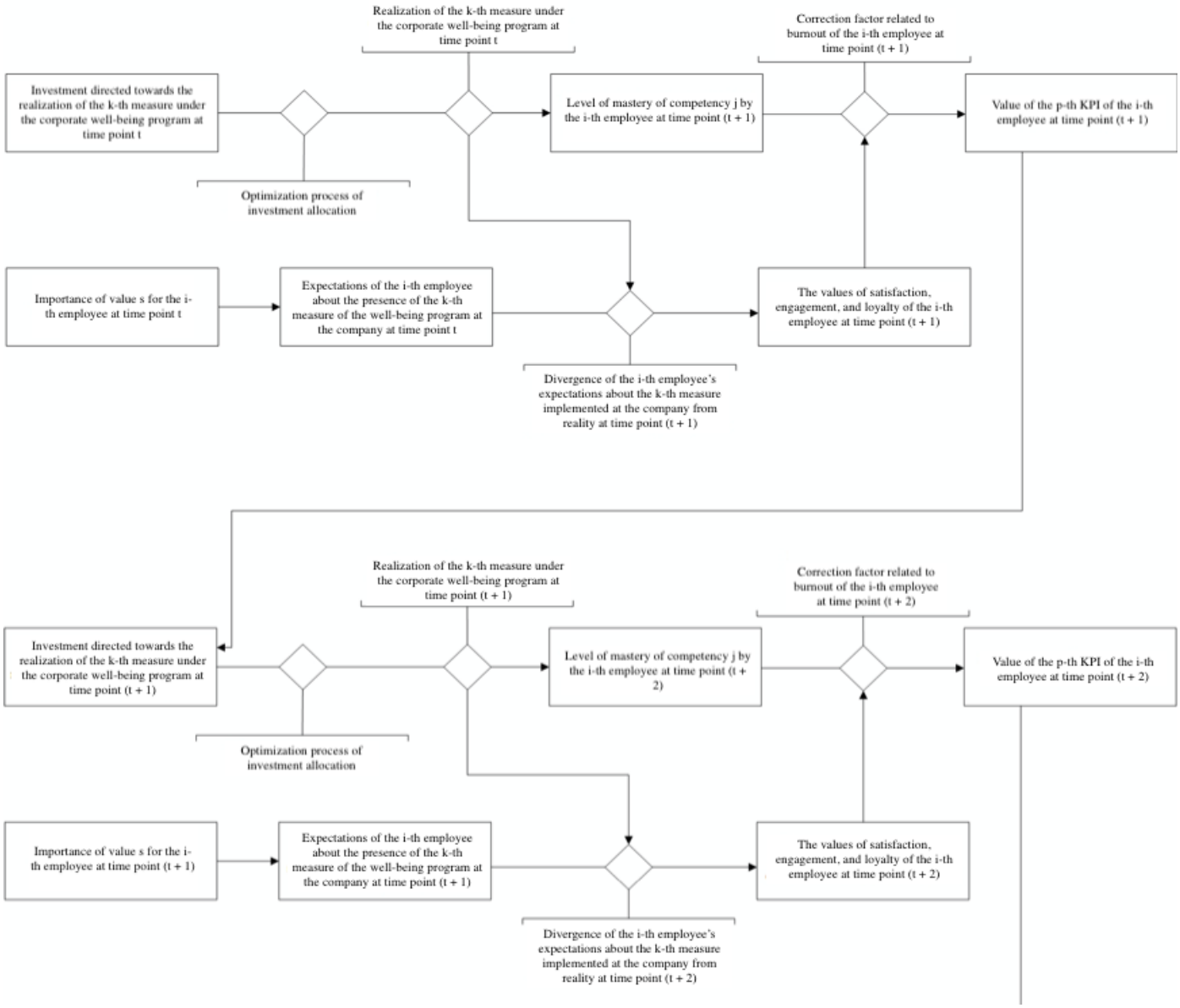

Figure 1. Conceptual model to describe the process of employee competency development in an organization

To give a summary, Figure 1 provides a description of the process of employee competency development by means of a corporate well-being program to achieve the target employee KPIs.

Based on the conceptual model, we formulated an optimization problem, the solution of which will allow us to determine the optimal structure of investment distribution by areas of investment for all moments of time on the planning horizon.

The target function of the optimization model has the form:

$$I(T) = \sum_{i=1}^{N} \sum_{p=1}^{6} \frac{y_{ip}(T)}{\underline{y}_{ip}(T)} \rightarrow max$$

where, $\underline{y}_{ip}(T)$ is the target value of the *p*-th KPI of the *i*-th employee at time point *T*.

The optimization variable is $z_k\ (t)$.

Within the optimization model, the total amount of investments allocated for the implementation of the corporate well-being program activities is limited to the budget allocated for the planning period $\sum_{t=1}^{T} \quad Z(t)$:

$$\sum_{t=1}^{T} \sum_{k=1}^{29} z_k\ (t) \leq \sum_{t=1}^{T} Z(t)$$

In accordance with the above, the multi-period optimization model is as follows:

$$I(T) = \sum_{i=1}^{N} \sum_{p=1}^{6} \frac{y_{ip}(T)}{\underline{y}_{ip}(T)} \rightarrow max,\ t = 1, \ldots, T$$

$$y_{ip}(t) = q_p\big(x_{i1}(t), \ldots, x_{i20}(t), a_i(t)\big)$$

$$a_i(t) = \big(a_{1i}(t) + a_{2i}(t) + a_{3i}(t)\big) \cdot \frac{1}{3}$$

$$a_{li}(t) = g_{li}\left(\left(b_{i1}(t) - \hat{b}_1(t)\right) \cdot \frac{\alpha_{i1}(t)}{5}, \ldots, \left(b_{ik}(t) - \hat{b}_k(t)\right) \cdot \frac{\alpha_{ik}(t)}{5}\right)$$

$$\alpha_{ik}(t) = h_k\big(d_{i1}(t), \ldots, d_{i10}(t)\big)$$

$$x_{ij}(t) = x_{ij}(t-1) + \Delta x_{ij}(t-1)$$

$$\Delta x_{ij}(t) = f_j\left(x_{ij}(t-1), z_1\ (t-1), \ldots, z_{29}(t-1)\right)$$

$$\sum_{t=1}^{T} \sum_{k=1}^{29} z_k\ (t) \leq \sum_{t=1}^{T} Z(t)$$

The solution of the optimization problem will help to create an efficient and transparent corporate environment in an organization, which will contribute to the growth of employee productivity and unleash their potential.

2.3 Survey

As a part of this study, a questionnaire survey of various target groups was conducted. The survey was conducted using the online service anketolog.ru. It included 39 questions aimed at self-assessment of the importance of personal values, well-being program activities, levels of proficiency in existing competencies, etc. For example, the request to assess the importance of values was formulated as "Assess the importance for you of each proposed value". The assessment was carried out using linguistic variables: "Not important", "Minimum importance", "Below average importance", etc. Linguistic variables, which were subsequently translated into fuzzy numbers, were used to smooth out the subjectivity and vagueness of the respondents' answers.

To collect data as part of the survey, the questionnaires were sent to top managers of seven Russian companies (Samokat, Avito, Gazprom-Media, etc.), who distributed them among their employees, mainly in IT and HR management. The total number of respondents amounted to 727 people.

The target portrait of respondents was as follows:

- 60% at the age of 26-40;
- 62% with over 9 years of experience;
- 64% with more than 2 years of experience at the last place of work;
- 34% from the sphere of IT, 18% from human resources;
- 23% chief specialists, 31% senior specialists.

2.4 Data analysis

Using the responses of survey participants, a fuzzy clustering of employee values, activities under the corporate well-being program, and respondents was carried out according to their assessments of the importance of values and expectations for the presence of particular activities.

The survey results are presented as trapezoidal fuzzy numbers (c_1, c_2, l, r), where c_1, c_2 are coordinates of the vertices of the upper base of the trapezoid and l, r are the lengths of side projections.

Clustering of fuzzy data was performed by a variant of the fuzzy *C*-means method as described by Coppi et al. [25]. The method consists in minimizing the target function under some constraints:

$$J = \sum_{i=1}^{I} \sum_{k=1}^{K} u_{ik}^m d^2(x_i, h_k)$$

where, x_i is the fuzzy coordinate vector of the *i*-th sample element; h_k is the fuzzy vector of the *k*-th cluster; u_{ik} is the measure of the *i*-th element's belonging to the *k*-th cluster; *m* is the specified parameter of fuzzification determining the degree of cluster fuzziness; *I* is the number of elements in the sample; *K* is the number of clusters.

The Euclidean distance between a pair of fuzzy points is used as a metric in the feature space:

$$d^2(x, x') = w_c^2\left(\left||c_1 - c'_1|\right|^2 + \left||c_2 - c'_2|\right|^2\right) + w_S^2\left(\left||l - l'|\right|^2 + \left||r - r'|\right|^2\right)$$

The limitations of the optimization problem are:

$$0 \leq w_s \leq w_c,\ w_s + w_c = 1$$
$$\sum_{k=1}^{c} u_{ik} = 1,\ u_{ik} \geq 0$$

The variables on which optimization is performed are u_{ik} and h_k and the metric parameters are w_s and w_c. During the clustering algorithm the optimum is determined alternately based on u_{ik} with fixed h_k and w_s, w_c, followed by identification of the optimum by h_k, w_s, w_c with fixed u_{ik}. The iterative process is repeated until the required accuracy in

finding the parameters is achieved. The parameter $m = 1.3$. The clustering algorithm was developed in the Python language.

3. RESULTS

3.1 Survey findings

The distribution of respondents' answers on the importance of the assessed values is presented in Table 1.

Table 1. Respondents' answers on the importance of the values

	Importance of the Value					
	Absent	Minimal	Low	Average	High	Very high
Freedom	2	3	13	93	226	390
Family	3	4	15	68	131	506
Enjoyment	1	2	19	86	223	396
Security	8	6	27	77	200	409
Power	39	69	122	242	138	117
Tradition	81	103	142	198	106	97
Achievement	4	3	23	82	226	389
Future	13	22	58	149	223	262
Socialization	21	29	87	210	189	191
Asocialization	225	130	133	131	58	50

3.2 Cluster analysis

As a result of clustering of respondents' values across the sample $\{d_{ir}(t), i = 1,\ldots,I, r = 1,\ldots,10\}$, we obtained the following clusters:

❖ the "social cluster" includes the values that are fundamental for human behavior and developed under the influence of the historical development of mankind (freedom, family, enjoyment, security, and achievement);

❖ the "progressive cluster" consists of the values that lie at the basis of the continuous transformation of technology, processes, etc. for the sake of simplifying human lives (future and socialization);

❖ the "totalitarian cluster" includes values that are at the core of human behavior aimed at proving personal superiority and displaying power (power, tradition, and asocialization).

Clustering of the respondents' expectations about the availability of certain activities under the corporate well-being program in a company for the sample $\{\alpha_{ik}(t), i = 1,\ldots,I, k = 1,\ldots,29\}$ resulted in three clusters:

❖ the "personal growth cluster" comprises the activities aimed at creating a comfortable and efficient corporate environment for the personal development of employees (integration of the employee into the processes of their industry, implementation of the talent management system, internal development of SOFT competencies, external development of SOFT competencies, P2P development, meaning management, development of work-life balance, and implementation of active corporate life);

❖ the "professional growth cluster" includes measures that focus on creating and developing a comfortable and efficient corporate environment for employees' professional development (implementation of career maps, internal development of HARD competencies, external development of HARD competencies, elimination of information vacuum, development of communication freedom, formation of a logical organizational structure, development of territorial flexibility, formation of adaptive work processes, development of technological and team leadership, and introduction of modern technology);

❖ the "individual well-being cluster" is composed of the activities aimed at creating and developing corporate conditions for the stabilization and promotion of employees' individual well-being (realization of corporate benefits, optimization of financial behavior, realization of financial potential, integration of the company into the employee's family life, integration of the employee into corporate life, integration of the employee into world processes, organization of proper nutrition, physical activity, healthy sleep, rest, and meditation practices, and the development of healthy habits).

Next, we conducted the clustering of respondents' ranking of values on the sample $\{d_{ir}(t), i = 1,\ldots,I, r = 1,\ldots,10\}$, which indicates three clusters: at the level of affiliation 0.9, cluster 1 includes 66 points, cluster 2 – 78 points, and cluster 3 – 127 points. Notably, with the affiliation level of 0.6, the number of points in cluster 1 amounts to 186, in cluster 2 – 219, and in cluster 3 – 183.

The results of a comparative analysis of clusters in terms of respondents' ranking of values are presented in Figure 2. For each value, the confidence interval of the median of the fuzzy mean rank at the confidence level of 0.9 is provided.

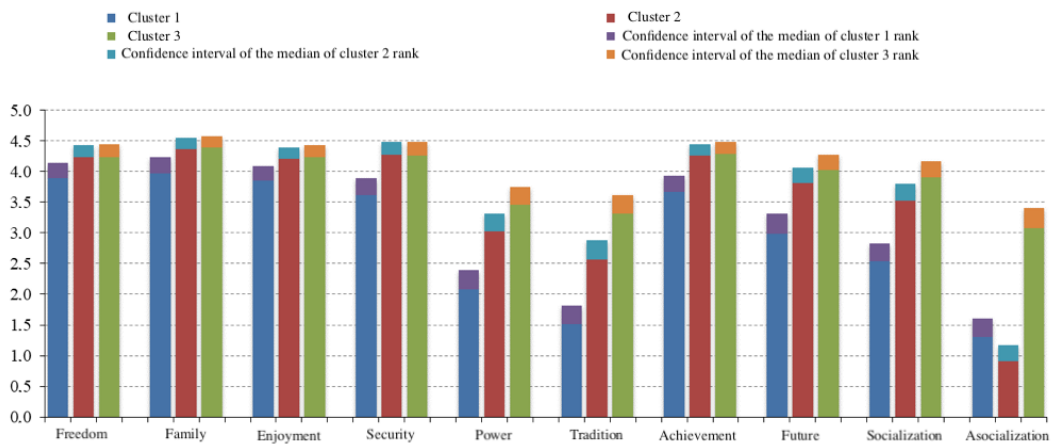

Figure 2. Clustering of respondents by the importance of values

The point of constructing confidence intervals for cluster rank median values is to identify significant differences between them. If the confidence intervals overlap for a particular parameter, it can be concluded that there are no statistically significant qualitative differences between the clusters by this parameter [26].

Analyzing Figure 2, we can see that clusters 2 and 3 are comprised by employees whose value models are based on strong (lower limit of the confidence interval greater than 4.0) values of "Family", "Enjoyment", "Security", "Freedom", and "Achievement" (i.e., the values in the "social cluster"). Cluster 3 has significant differences in the totalitarian values of "Power", "Tradition", and "Asocialization" (which are less pronounced in cluster 3, in contrast to cluster 2). In its turn, cluster 1 differs significantly from the others in that all values in it are less pronounced by importance than in the other two clusters. We can assume that this cluster includes employees who at the current moment do not have an established value model (proportions relative to clusters 2 and 3 remain the same).

Clustering of respondents' ranking of activities within the well-being program on the sample $\{\alpha_{ik}(t), i = 1,\ldots,I, k = 1,\ldots,29\}$ demonstrates the presence of three clusters: at the level of affiliation 0.9, cluster 1 includes 173 points, cluster 2 – 45, and cluster 3 – 45. With the level of affiliation equaling 0.6, the number of points in cluster 1 reaches 274, in cluster 2 – 243, and in cluster 3 – 96.

The results of the comparative analysis of clusters in terms of respondents' ranking of their expectations for the availability of certain activities within the corporate well-being program are presented in Figure 3. For each measure, the confidence interval of the median of the fuzzy mean rank at the confidence level of 0.9 is given.

Analyzing Figure 3, we shall describe the obtained clusters as follows: cluster 1 includes employees for whom the formation and development of the well-being program is of high importance for performing professional activities; cluster 2 comprises employees who attribute medium importance to this issue; cluster 3 is the workers who attribute low importance to the implementation of the program. Unlike in respondent clustering by the importance of values, here all the indicators demonstrate significant differences.

As part of the study, we constructed probability matrices of respondents' transitions from clusters by values to clusters by expectations of activities and vice versa. The obtained probabilities are presented in Table 2.

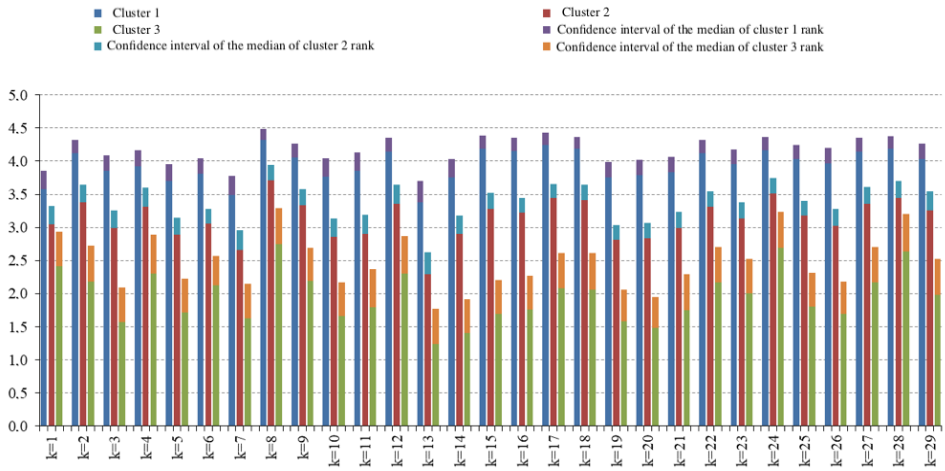

Figure 3. Clustering of respondents by assessment of the importance of implementation of certain activities under the well-being program in the company

Table 2. Probability matrices of transitions from clusters in one category to clusters in the other category

Clusters by Values	Probability	Clusters by Measures	Clusters by Measures	Probability	Clusters by Values
	0.21	Cluster 1		0.16	Cluster 1
Cluster 1	0.50	Cluster 2	Cluster 1	0.40	Cluster 2
	0.29	Cluster 3		0.44	Cluster 3
	0.45	Cluster 1		0.38	Cluster 1
Cluster 2	0.41	Cluster 2	Cluster 2	0.36	Cluster 2
	0.14	Cluster 3		0.26	Cluster 3
	0.58	Cluster 1		0.56	Cluster 1
Cluster 3	0.35	Cluster 2	Cluster 3	0.30	Cluster 2
	0.08	Cluster 3		0.14	Cluster 3

The results given in Table 2 show that cluster 1 by the importance of employee values is made up of 21% of employees in cluster 1 by the importance of well-being program activities, 50% of employees in cluster 2, and 29% in cluster 3. In other words, for employees with a less pronounced value model, the well-being program in the company is of medium importance.

Conversely, cluster 1 formed by the importance of the well-being program activities consists of 16% of employees in cluster 1 by values, 40% in cluster 2, and 44% in cluster 3. This means that the well-being program in the company is of high importance for employees with prevailing social values.

4. DISCUSSION

The study highlights the shortcomings of existing tools for modeling human capital development through the implementation of a well-being program. The proposed conceptual model allows us to overcome several of them. For example, the presence of a dynamic relationship between achieving target KPI values and the amount of investment allocated to the implementation of the well-being program allows to implement a multi-period development of employee competencies and create a tool for an optimal portfolio of well-being activities and short- or medium-term planning for their implementation. The use of a fuzzy set approach within the framework of a conceptual model allows us to consider existing uncertainties and risks when making decisions on the development of employee competencies. Within the framework of the model, the relationships of its individual components are logically described: well-being program activities, competencies, burnout, values, etc. In subsequent studies, economic and mathematical models will be built that functionally describe these relationships, which will allow the development of an optimization model for determining a portfolio of activities of well-being programs to maximize progress towards achieving organizational goals.

The conceptual model has theoretical significance because it is the basis for further research. A description of the system for developing employee competencies through the implementation of the well-being program in the future will allow us to develop several tools that have high practical significance for company and HR management. This is due to the fact that recently, a trend has emerged aimed, on the one hand, at increasing the efficiency of management of an organization's financial resources and, on the other hand, at its continuous development and the formation of competitive advantages that will allow it to occupy the necessary market share for survival in the global economy in the context of increasing competition.

5. CONCLUSION

As a result of the research, a conceptual model for the development of employees' competencies was developed to achieve the target values of their KPIs through the formation and implementation of an optimal corporate well-being program considering employee burnout.

We conducted a questionnaire survey of different target groups, in which 727 respondents from different organizations were interviewed. Based on the responses obtained, a fuzzy clustering by values and assessments of expectations for the availability of certain activities within the corporate well-being program in an organization was constructed.

The obtained findings indicate that employee clustering can suggest several propositions for the most efficient activities of the corporate well-being program according to the envisioned generalized employee value model. Conversely, it can help to determine the optimal value profile of a candidate for them to work effectively in the organization proceeding from the current corporate well-being program.

In the continuation of the study, we will first formalize the functional dependencies between the components of the conceptual model in the form of economic and mathematical models. Secondly, a dynamic optimization model for forming an optimal set of measures of the corporate well-being program for the maximum possible progress in achieving KPIs will be constructed and a method for its solution will be proposed.

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