

The Role of Non-Material Factors in Increasing Labor Productivity

Sharzada Akhmetova *

Ardak Sakhanova **

Abstract: The main idea of article «The Role of Non-Material Factors in Increasing Labor Productivity» is that social –psychological climate in collective is the major factor of economic - social progress in the country. In Kazakhstani market conditions the understanding of the person as productive force has amplified and his personal features are ignored. However in conditions of teamwork moral qualities of each member of labor collective become a component of productive force of all collective. In this research paper the social - psychological climate, its development and influence on productivity are key objects of economic measurement. Research has been carried out in copper-smelting factory in the city of Dzhezkazgan. The main purpose of the research was to study a social - psychological climate of a primary work collective (factors of a psychological climate, general job satisfaction, mutuality, neutrality, potential conflict, concurrence of the formal and informal leader in collective, intensity of potential fluidity, interpersonal compatibility, an evaluation of the master) and its influence on labor productivity. The greatest possible value of productivity has been designed at an ideal social - psychological climate on the basis of economic-mathematical model. It has been identified that on average it is possible to increase productivity up to 30 % due to the moral factors, not attracting additional investments. It is proved that economic relations should be bound with social – psychological ones, forming a single whole.

Key Words: Basic or main production collective, collectivism, foreman evaluation factor, intermediate or secondary collective, labor collective, primary labor collective, primary production collective, reciprocity factor

* Sharzada Akhmetova. Candidate of science; current position: Director of MBA, Continuing Education Department, Kazakhstan Institute of Management, Economics and Strategic Research (KIMEP), KAZAKHSTAN- ALMATY
sharzada@kimep.kz

** Ardak Sakhanova. Candidate of science; current position: Assistant Professor, Kazakh Economic University (KEU), KAZAKHSTAN, ALMATY

I. Introduction

Economic development depends largely on human factor

Under the market conditions in Kazakhstan the understanding of the person as productive force and the attitude towards him as part of public relations has amplified. Under such approach people are appreciated in turns of professional skill, whereas level of knowledge and personal character traits (bad mood, troubles in family, indifference, disorder) are completely ignored. However, under the conditions of collective work moral qualities of each member of the entity can become both the catalyst, and a brake of economic growth of all group. In the Kazakhstani business practice, managers ignore the factor of trouble of a social - psychological climate in labor collective, making huge efforts to increase production, investments and the profit.

In order to adapt the population to these historic breakthroughs that occur in Kazakhstan, it is important to recognize that mutual human relations have entirely changed in connection with the idea that collectivism completely is rejected as an anachronism.

The person simultaneously is the productive, economic and social subject; he is individual and at the same time a member of the collective. Among the actual problems of today are the problems of social self-realization of workers and creation of condition for development of interest of common working people to each other, with a view of an effective combination of personal and group motives during work. The purpose of this paper is to consider concrete measures on anticipation of possible conflicts by examining several types of labor collectives, identifying how social control can affect these collectives, measuring psychological factors that influence employees behavior and providing various examples of disagreements between managers and workers.

II. Classification of production collectives

Today there is a general tendency in the world especially in the sphere of economics to focus on man. Labor collective is considered through the prism of existence of man, taking into account sociological interpretations of a man, acknowledging the fact that human progress cannot be reduced to just increase income or welfare. It is the labor collective which becomes the basis of new and modernized classical social economic paradigms (Platteau 1994b). Primary labor collective is a rather closed social system where under its frames it improves and develops its industrial activity in accordance with the general goals of the whole entity.

The relations between labor productivity and development of social-psychological climate are faintly researched in social and economic literature. Moreover, it is recognized that human abilities are the research area of psychology (ibid.). Whereas moral qualities of each member of the collective under group work become an inalienable part of the productive power of the entity (ibid.). It seems reasonable from this point of view that social and psychological climate and its impact on the productivity would become an area of investigation and economic estimation.

Under the conditions of collective work moral qualities of each member of the entity – sense of responsibility, sense of discipline, self-control and others are the constituent part of production power of the group. Interpersonal relationships acquire a rather independent place-determining attitude of a worker towards his labor and his behavior during the production. Participation of organization members in operation of collective relations is connected to complicated processes of mutual adaptation when the person accepts the rules or norms of interrelation. There appears the necessity to investigate social processes taking place in the group, existing relations and based on that platform necessity to research the mechanism of functioning of the production collective and evaluating it as a social body. In order to develop the forms of management and improve organization of labor in primary labor collectives, reveal and use its internal reserves and capabilities, it is important to consider social aspects of production activity.

We offer the classification of production collectives. As far as the problem of utilization of common principles and criteria of minimization of collectives, definition of main qualities has not been sufficiently developed. In this classification we distinguish between the following collectives: primary production collective or group, intermediate or secondary collective, main or basic collective. Under primary production collective we consider a group of people implementing common production task and participating direct personal contacts. Intermediate or secondary collective is the collective of a shop or any big site or other structural department of the enterprise consisting of a few primary groups united by a common technological cycle and it includes groups of people involved in organization and management of the collective. Basic or main production collective unites primary and intermediate collectives connected by a common objective and managed by common leadership.

Primary labor collective plays important role in production activity of the worker where relations are more personal. As a rule, in such a group they

know a lot about each other: family status, plans for the perspective, views on life, attitude towards labor, habits etc. The process of formation psychological and social compatibility is developing in a more complicated and longer way than the process of acquiring knowledge and skills. The influence of primary work group on a personality is defined by internal cohesion and the organizational ability of the group. In its turn this ability is determined by many technical, organizational and social factors (Baro and Sala-I-Martin, 1995).

III. The social control

All processes taking place in primary work group can be approximately divided into two groups: social-psychological group (process of introduction and establishing non-formal structure, developing of common opinion on the team work) and organizational-professional group (expanding industrial, organizational skills of the workers, changing functional and professional division of labor and work cooperation). Because of the fact that the range of production, qualification level and personal composition of the primary group change constantly, all these processes are going simultaneously. Social control is the main tool of influence of the primary group on its members. We define social control as the impact made by the group on its members in order to ensure their conduct in accordance with the agreed norms. It is controlled through the opinion expressed by the group. The tools of control are encouragement and negative sanctions – how the group reacts to the conduct of its members and it is counted not any less important than administrative measures. Social control goes through receiving information on the worker's activity, analyzing the current state of affairs, comparing the contemporary state of affairs with the accepted norms and standards of conduct, and regulation of the conduct. Social control is directed to establish of the sense of responsibility in each member of the group because it defines the activity and mode of conduct of a personality.

Objective side of the responsibility, determined in our case by the production conditions, means quantity and quality of performance of the subject. Its subjective side is determined by the fact how the subject defines his forms of activity and how he realizes the necessity of the activity, that is moral – psychological part of the sense of responsibility. Both subjective and objective contents are inseparable.

Thus, presence of direct technological connections among workers, that is joint work, provides more objective characteristics of the information. The more objective the information, the higher the fairness of the control. Regulation of

behavior can be internal and through the reference of collective to administration. The analysis of stages of the social control shows, that the most objective and, hence, the fair and argued conclusion about the real labor contribution is possible, if the social control is based on a technological one. Otherwise it is unpersuasive and can turn to remarks. According to the investigations, collectives where the sum of individual labors is simply used are least effective, that is collectives where workers are not connected by process of work and there are no technological connections between them cannot work in integrity. During the stabilization process in collective there are traditions regulating both industrial and its non-productive activity. For example, regular summarizing and the analysis of results of work concerns to the first kind of traditions. It is the fine form of an exchange of experience, improvement of skill, struggle against infringements of labor and technological discipline. The second kind of traditions promotes creation of a special atmosphere of attention to the person (birthdays of members of a brigade are marked, visiting of ill workers and members of their families etc.).

Implementation of social control shows the democratic style of the leadership, establishment of cooperation among the members of the group, consolidation in achieving the common goal. Democratic style is caused by the following: equal social status of the members of the group, cohesion of the conducts and views, establishment of stable informal ties, upgrading of skills in the process of mutual work (Runciman 1983).

IV. The technique of measurement of a psychological climate and its approbation

The concept of “psychological climate” has different definitions in social literature. In this study we offer methods of evaluation of “psychological climate” based on consideration of individual estimations of all sides of interpersonal relations in the group made by the members of primary groups.

Investigations were conducted at the copper plant of Dzhezkazgan, carried out in three departments (electric furnace section, converter section and anode reaction section) of metallurgical workshop. The objective of investigations was to develop sociological and economic analysis of activity of primary group workers in order to demonstrate the idea that production behavior of the workers of the group depends on the cohesion and solidarity of the working group. Concrete recommendations were developed on improving the social – psychological climate of the collective.

We considered the following social – psychological factors, which influence the labor productivity (Y):

- psychological climate factor	X ₁
- work satisfaction factor	X ₂
- reciprocity factor	X ₃
- neutrality factor	X ₄
- conflict factor	X ₅
- factor of formal coincidence and non-formal leader of the group	X ₆
- labor fluctuation factor	X ₇
- interpersonal cohesion factor	X ₈
- foreman evaluation factor	X ₉

After processing the results we came to the following equation:

$$Y = \sum_0^9 d_n \cdot X_n \quad (1),$$

where Y – labor productivity, X_n – appropriate factor.

Value of the coefficients for the equation are the following: for electric furnace section – 8.67; -11.65; 25.11; -0.44; 1.44; 10.33; -0.05; -362.93; 385.67; -98.06; for converter section – 2.55; -0.5; -2.65; 1.87; -4.25; 12.57; -2.23; -307.39; -706.83; 1006.76; for anode reaction section – 1.35; -13.89; 11.0; 0.33; -3.64; -3.08; 0.49; -27.05; -1080.89; 1454.01. The coefficient of multiple correlation for the above demonstrated type of dependence was equal to P=0.8 for electric furnace section; P=0.51 for converter section; P=0.63 for anode reaction section.

Disperse and comparative analyses were made where some additional coefficients of evaluation were defined which are traditional in multi-factor statistical analysis. For equation (1) there were calculated pair correlation's coefficients, determining correlation of factors themselves and correlation of productivity of labor and each factor separately; particular coefficients of elasticity which trace the change, in this certain case, of productivity of labor under alteration of each of the considered factors for 1%. The analysis of the particular coefficients of elasticity proved that, for example, in electric furnace

section the highest impact on the rise of productivity was made under coefficient of mutual cohesion. It was equal to 1.55.

Table 1. Elasticity coefficient

N	Sections of metallurgical workshop		
	Electric furnace	Converter	Anode reaction
1	0.03788.	0.00413	0.03887
2	0.076.41	0.01688	0.03351
3	0.00147	0.00715	0.00084
4	-0.00155	-0.00291	-0.00199
5	-0.00181	-0.00254	-0.00011
6	0.00021	0.00567	0.00170
7	-0.15301	-0.23472	-0.01352
8	1.53899	3.12470	3.24274
9	0.38845	4.35828	4.25629

The analysis of particular coefficients of elasticity (Table 1) showed that the factors ($X_1... X_9$) influence labor productivity positively. In order to show economic interpretations, elasticity coefficients were calculated when it is possible to measure quantitative influence of each of the considered factors on labor productivity.

The elasticity coefficients calculated for electrical furnace divisions are shown below.

1% shock to the factor	Rise of productivity, %
x ₁	0.0378
x ₂	0.0764
x ₃	0.0014
x ₆	0.0002
x ₈	1.5389
x ₉	0.3884

When ranged according to the degree of influence the considered factors could be arranged as follows:

- for electric furnace section $x_8 > x_9 > x_2 > x_1 > x_3 > x_6$
- for converter section $x_9 > x_8 > x_2 > x_3 > x_6 > x_1$
- for anode reaction section $x_9 > x_8 > x_1 > x_2 > x_6 > x_3$

When analyzing coefficients of elasticity it comes out that the biggest influence on the rise of labor productivity is made by the coefficient of interpersonal cohesion, factor of foreman evaluation, factor of work satisfaction in the sub-section and coefficient of psychological climate.

Factors 4, 5, 7 influence labor productivity negatively. In the ranged scheme we see:

- for electrical furnace section $x_7 > x_5 > x_4$
- for converter section $x_7 > x_4 > x_5$
- for anode reaction section $x_7 > x_4 > x_5$

The most negative influence on labor productivity is produced by the coefficient of labor fluctuation, neutrality and conflict factors.

Based on the economic-mathematical model of labor productivity the maximum likelihood value of labor productivity was calculated “ideal meanings” of the factors when $x_n = 1$ under $n = 1,2,3,6,8,9$ and $x_n = 0$ under $n = 4,5,7$.

Under ideal social - psychological climate in the collective it is possible to achieve the following labor productivity rise: for electrical furnace section - 27.25 %, for converter section – 32.35 %, for anode reaction division – 32.52 %. It should be noted that any of these measures on improving social – psychological climate does not need any funds.

V. Removal of psychological intensity in collective - the catalyst of productivity growth

One of the main conditions of consolidation of the working group is elimination of all reasons causing conflicts, which affect the efficiency of group activity. As the principle methods of revealing conflicts there were used observation, interview, biographical and social questionnaire. The degree of psychological tension depends on the forms of conflict duration that could cause an acute emotional frustration or would lead to the chronic state of dissatisfaction. Any form of the conflict can be transformed into another one. The following levels could be distinguished where conflicts usually take place: “worker-worker”, “primary working group – administration”, “primary working group – its head”. At each level certain peculiarities could be traced in overcoming the conflicts, which should be taken into consideration during developing organization of labor (Bok, 1987).

Psychological incompatibility of labor collective members results from difference in behavior, abilities and other psychological characteristics of human. Sociological incompatibilities expressed in different value orientations of a personality appear mainly between the youth and the workers of older generation. Conflicts caused by such reasons are not so acute than the conflicts caused by psychological incompatibility. Relations between workers and administration are the psychological reflection of organization of labor, production and management. Workers think reasonably that organization and service of working places, mechanization of manual processes will establish favorable working conditions and creating environment for employees is the direct duty of the administration. But exactly these issues are still in suspended conditions for some enterprises. The main reason of these types of conflicts is disturbance through increasing or decreasing the competence of the primary work group made by administration. The most vivid example of conflicts of “primary work group - its head” type is incompatibility of formal and non-formal leaders.

Primary collective is a closed type of social system and under this frame it develops independently its productive activity in accordance with the general objectives of the entity. Organizational and bringing up activities of administration includes forms of information and reporting to the workers of the collective on the results of enterprise activity and explanation of the difficulties they encounter and the ways of realization of the task. In cooperation with the primary work group, administration should bear in mind its peculiarities possessed by this form of social body. It means that the real

structure of existing relations in the group, structure of internal ties and connections of sub-groups in the group, the state of certain members should be taken into account when dealing with primary labor collective. Sociological information will provide the best ways of regulation of relations in the primary labor collective and among its members (Kernberg, 1998).

In present conditions the idea and practice of collectivism and partnership relations are completely rejected as an anachronism. However, during work interpersonal attitudes exist as expression of psychological and social interaction of people. The local social and psychological conflict becomes a brake for economic progress. The person simultaneously is both the productive and economic subject and the social individual. Labor activity forms in the person a diverse complex of needs, social - psychological installations in motivational sphere. Earnings, material results, the contents of work continue to remain the basic motive with all age and social groups interrogated, while the share of ideological motivation is insignificant

Efficiency rise in primary labor collective activity, as was proved by the results of investigation, would result, firstly, in an increase in the level of labor responsibility and, correspondingly, a rise in the levels of sociological coefficients. Taking into consideration the fact that primary labor collective is a developing system, calculation of the coefficients should be revised systematically (once in a quarter) and that will lead to the efficiency of steps undertaken.

VI. Conclusion

The stable social and psychological climate of labor collective is an important factor for economical and social progress of a country. Under market conditions in Kazakhstan the understanding of the person as productive force and the attitude towards him as part of public relations has amplified, while moral qualities of each member of the collective under group work become an inalienable part of the productive power of the entity. Public progress cannot be reduced to growth of material wealth. It is impossible, if the human potential is not realized.

On the basis of a classification of production collectives as primary production collective, intermediate or secondary collective, basic or main production collective it is shown in this paper, that the primary labor collective plays an important role in production activity of the worker. All processes taking place in primary work group can be approximately divided into two groups: social-

psychological and organizational-professional. Social control is the main tool of the primary group influence on its members.

At the copper plant of Dzhezkazgan investigations were made on studying social and psychological climate of primary labor collective (factors like: psychological climate, work satisfaction, reciprocity, neutrality, conflict, coincidence of formal and non-formal leader of the group, labor fluctuation, interpersonal cohesion, foreman evaluation) and its impact on the labor productivity. Based on an economic – mathematical model of labor productivity the maximum likelihood value of labor productivity is calculated under ideal social and psychological climate. It is proved that, on average, it is possible to increase productivity up to 30 % due to moral factors, not requiring additional investments.

Economic relations should be bound with social and psychological ones, forming a single whole. It is necessary to emphasize that this group of questions for Kazakhstan is not unexpected. The investigations of scientists devoted to problems of the person, all-round and harmonious development of the person, his social activity, appreciably prepare it.

We offered concrete actions for removal of psychological intensity in collective. Taking into consideration the fact that primary labor collective is a developing system, social investigation should be revised systematically and that will lead to the efficiency of steps undertaken.

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Manevi Faktörlerin Üretime Etkisi

Sharzada AKHMETOVA*

Ardak SAKHANOVA*

Özet: Makalenin ana fikrine göre, topluluktaki sosyal-psikolojik atmosfer ülkenin ekonomik-sosyal gelişmesinde başlıca etkindir. Kazakistan'da pazarlama şartlarında insan üretici bir güç olarak algılanmakta ve onun kişisel istekleri dikkate alınmamaktadır. Bununla beraber, grup çalışmalarında her üyenin moral gücü bütün topluluğun üretici gücünün bir parçası sayılmaktadır.

Bu makalede soyal-psikolojik atmosfer, gelişimi ve üretime etkisi, ekonomik ölçünün anahtarları olarak değerlendirilmiştir. Araştırma Cezkazgan şehrinde bulunan bakır eritme fabrikasında yapılmıştır. Araştırmanın başlıca amacı, basit çalışma grubundaki sosyal-psikolojik durum (psikolojik durum faktörleri, iş memnuniyeti, karşılıklık, çatışma, yönetici ve grup liderleri arasındaki rekabet, akıcılık, şahıslar arasındaki uyum, uzman notu vb.) ve üretime etkisini incelemektir. Ekonomik-matematiksel örnekleme yaparak, üretimin muhtemel en yüksek değeri, ideal sosyal-psikolojik durumda kaydedilmiştir. Üretimin, ek yatırımlar yapılmadan da, manevi faktörler sayesinde ortalama % 30'a kadar yükseltilebileceği tespit edilmiştir. Ekonomik ilişkilerin sosyal-psikolojik ilişkilerle bağlantılı olup bir bütün oluşturması gerektiği görülmüştür.

Anahtar kelimeler: Temel veya baş grup, grup çalışması, orta ve ya ikinci grup, üretici grup, basit üretici grup

* Doç.Dr. Kazakistan İşletme, Ekonomik ve Stratejik AraştırmalarEnstitüsü (KIMER) - ALMATI
sharzada@kimep.kz

** Yard.Doç.Dr. Kazak Ekonomi Üniversitesi (KEU)-ALMATI

Роль Нематериальных Факторов в Развитии Производительности

Шерзада Ахметова*, к.н., доцент

Ардак Саханова,** к.н., доцент

Резюме: В статье « Развитие экономики зависит от человеческого фактора» говорится о том, что социально – психологический климат в коллективе является важнейшим фактором экономико-социального прогресса в стране. В рыночных условиях в Казахстане усилилось понимание человека как производительной силы и игнорируются его личностные черты. Однако в условиях коллективного труда моральные качества каждого члена трудового коллектива становятся составной частью производительной силы всего коллектива.

В данном исследовании социально-психологический климат, его развитие и влияние на производительность стали объектом экономического измерения. В условиях медеплавильного завода в городе Джезказган было проведено исследование по изучению социально-психологического климата первичного производственного коллектива (коэффициенты психологического климата, общей удовлетворенности работой, взаимности, нейтральности, конфликтности, совпадения формального и неформального лидера в коллективе, интенсивности потенциальной текучести, межличностной совместимости, оценки мастера) и его влиянию на производительность труда. На основании экономико-математической модели было рассчитано максимально возможное значение производительности при идеальном социально-психологическом климате. Оказалось, что можно в среднем до 30% увеличить производительность за счет моральных факторов, не привлекая дополнительных инвестиций. Обосновывается, что экономические отношения должны переплетаться с социально-психологическими, образуя единое целое.

Ключевые Слова: основной или главный производственный коллектив, коллективизм, эволюционный фактор, средний коллектив, работающий коллектив, начальный работающий коллектив, начальный производственный коллектив, фактор

* *Казахстанский Институт Менеджментских, Экономических и Стратегических Исследований (KIMEP)-Алматы*
sharzada@kimep.kz

** *Казахстанский Экономический Университет(KEU)-Алматы*