DEVELOPMENT OF A MOTIVATION SYSTEM AND SUPPORTING THE SUCCESS OF THE INTERNAL AND EXTERNAL INTERACTIONS OF THE NETWORK PROJECT GROUP

Разработка системы мотивации и поддержания успешности внутренних и внешних взаимодействий сетевой проектной группы

Desarrollo de un sistema para motivar y mantener el éxito de las interacciones internas y externas de un equipo de proyectos de red

Desenvolvimento de um sistema para motivar e manter o sucesso das interações internas e externas de uma equipe de projetos de rede

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Abstract

This article shows the relevance of creating external and internal interactions to improve the efficiency of network project groups. It has been identified the development goal of the motivation system and supporting the success of the internal and external interactions of the network project group. The causes of conflict situations at the different group life cycle stages have been defined. There have been considered the situations of the personal qualities influence of employees on the interaction quality within the group and on the result of its effective work to improve the company competitiveness. There have been considered the situations of personal employees' qualities influence on the interaction quality within the group and on the result of its effective work to improve the company competitiveness. It has been proposed the anticipatory and corrective actions taken system to remedy deficiencies taking into account the peculiarities of the different group life cycle stages. The main shortcomings of the network project group work have been shown, which are difficult to eliminate, since they are closely related to positive qualities. The proactive measures system has been proposed, the adoption

Аннотация

В статье показана актуальность создания внешних и внутренних взаимодействий для повышения эффективности работы сетевых проектных групп. Выявлена цель разработки системы мотивации и поддержания успешности внутренних и внешних взаимодействий сетевой проектной группы. Определены причины возникновения конфликтных ситуаций на разных этапах жизненного цикла группы. Рассмотрены ситуации влияния личных качеств сотрудников на качество взаимодействия внутри группы и на результат её эффективной работы по повышению конкурентоспособности компании. Предложена система упреждающих и принимаемых по ситуации мероприятий по устранению недостатков с учетом особенностей разных этапов жизненного цикла группы. Показаны основные недостатки работы сетевой проектной группы, которые трудно устранить, т.к. они тесно связаны с положительными качествами. Предложена система мер упреждающего характера, принятие которых необходимо подготовить до старта проекта

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of which must be prepared before the project start or in the early of its life cycle stages. It also has been presented the measures taken in the process of the group's functioning on the situation of problems reducing the success of the internal and external interactions. The involvement problems in the employees' group and their enthusiasm to projects have been considered. The participants groups have been selected according to their involvement degree in project activities. The scheme has been developed for motivating and maintaining the success of internal and external interactions of the network project group.

Keywords: conflicts, competitiveness, internal and external project group interactions, IT companies, life cycle stages, motivation, network project groups, project involvement.

или на первых этапах его жизненного цикла. Также представлены меры, принимаемые в процессе функционирования группы по ситуации возникновения проблем снижения успешности внутренних и внешних взаимодействий. Рассмотрены проблемы вовлеченности в группу сотрудников и их увлеченностью проектами. Выделены группы участников по степени их вовлеченности в проектную деятельность. Разработана схема мотивации и поддержания успешности внутренних и внешних взаимодействий сетевой проектной группы.

Ключевые слова: внутренние и внешние взаимодействия проектной группы, вовлеченность в проект, ИТ – компании, конкурентоспособность, конфликты, мотивация, сетевы е проектные группы, этапы жизненного цикла.

Resumo

Este artículo muestra la relevancia de crear interacciones externas e internas para mejorar la eficiencia de los equipos de proyectos de red. En el documento se identifica el objetivo de desarrollar un sistema de motivación y mantener el éxito de las interacciones internas y externas. Asimismo, se determinan las causas de las situaciones de conflicto en diferentes etapas del ciclo de vida del grupo. Por otro lado, se consideran las situaciones de influencia de las cualidades personales de los empleados en la calidad de la interacción dentro del grupo y en el resultado de su trabajo efectivo para mejorar la competitividad de la empresa. En el presente trabajo se ha propuesto un sistema de acciones proactivas y correctivas tomadas para corregir las deficiencias teniendo en cuenta las características de las diferentes etapas del ciclo de vida del grupo. Se muestran los principales inconvenientes del grupo de proyectos de red, que son difíciles de eliminar (1-3), porque están estrechamente relacionados con las cualidades positivas. A su vez, se propone un sistema de medidas proactivas, cuya adopción debe prepararse antes del inicio del proyecto o en las primeras etapas de su ciclo de vida. El documento también presenta las medidas tomadas en el curso del funcionamiento del grupo en caso de problemas de reducción del éxito de las interacciones. Asimismo, se toman en consideración los problemas de participación en el grupo de empleados y su entusiasmo por los proyectos, se resaltan los grupos de participantes según el grado de su participación en las actividades del proyecto y se desarrolla un esquema para motivar y mantener el éxito de las interacciones internas y externas del equipo de proyecto de la red.

Palavras-chave: competitividad, conflictos, empresas de TI, etapas del ciclo de vida, grupos de proyectos en red, interacciones internas y externas de grupos de proyectos, motivación, participación en proyectos.

Resumo

Este artigo mostra a relevância de criar interações externas e internas para melhorar a eficiência das equipes de projeto de rede. O documento identifica o objetivo de desenvolver um sistema de motivação e manter o sucesso das interações internas e externas. Além disso, as causas das situações de conflito são determinadas em diferentes fases do ciclo de vida do grupo. Por outro lado, são consideradas as situações de influência das qualidades pessoais dos empregados na qualidade da interação dentro do grupo e no resultado de seu efetivo trabalho para melhorar a competitividade da empresa. No presente trabalho, um sistema de ações proativas e corretivas tomadas para corrigir as deficiências foi proposto levando-se em consideração as características das diferentes etapas do ciclo de vida do grupo. As principais desvantagens do grupo de projetos de rede são mostradas, que são difíceis de eliminar (1-3), porque estão intimamente relacionadas às qualidades positivas. Ao mesmo tempo, é proposto um sistema de medidas pró-ativas, cuja adoção deve ser preparada antes do início do projeto ou nos primeiros estágios de seu ciclo de vida. O documento também apresenta as medidas tomadas no decorrer da operação do grupo em caso de problemas de redução do sucesso das interações. Da mesma forma, os problemas de participação no grupo de funcionários e seu

entusiasmo pelos projetos são levados em consideração, os grupos de participantes são destacados de acordo com o grau de participação nas atividades do projeto e um esquema é desenvolvido para motivar e manter o sucesso. das interações internas e externas da equipe de projeto da rede.

Palavras-chave: Competitividade, conflitos, empresas de TI, estágios do ciclo de vida, grupos de projetos em rede, interações internas e externas de grupos de projetos, motivação, participação em projetos.

Introduction

In the previous works, the network project groups definition (Komarova & Dadyan, 2019; Komarova, Zamkovoj & Novikov, 2018) is given, the main difference of which consists in attracting human resources from the outside and increasing the IT companies competitiveness by creating external interactions. Thus, it is important to have such quality employees as the ability to interact within the project group and build external relations for the effective management and functioning of the network project group.

This article purpose is to create a system for motivating employees of the network project group to increase the efficiency of its operation and to maintain the success of the internal and external interactions.

Methodology

The interaction success in a network project group is influenced by various factors, some of which relate to the personal employees' qualities, and some to group thinking (Komarova & Dadyan, 2019).

The interactions success depends on:

- the psychological state of the group or emerging trends;
- the involvement degree in the project of each employee.

The external relations are transformed into internal ones due to the implementation principle of involving new specialists in the network structure to increase the group's capabilities (Komarova, Zamkovoj & Novikov, 2018). Therefore, often the difference between internal and external interaction for some period becomes blurred. As a result, the state of already established bonds can influence the bonds that are in the formation process. Thus, both internal and external relations are affected.

The network and conventional project groups have similar trends. Let us analyze the possible group states (Table 1), especially in situations when it comes to interaction within the group. Some difficulties may arise and occur only after the start of work. It is necessary to concentrate on two measures categories to eliminate difficult situations; these are proactive actions and actions upon the complex situation occurrence (Table 2).

The conflict situations can arise at any group's life cycle stage, therefore the manager must have the knowledge to eliminate them. The considered situations concern the personal qualities manifestation, influence the interaction quality, and finally on the result. Therefore, the manager must be involved in the group formation.

It is rather difficult to eliminate the listed disadvantages, since they are the other side of positive qualities. But it is possible and necessary to develop a number of the compensating measures, taking into account the peculiarities of the life cycle stages of the project group at which they are taken. The following are necessary as compensating measures.

Table 1. Possible group states affecting the interactions success within the group.

№	Possible group states	Description of states affecting the interactions success within the group
1	Projectism	This is a phenomenon that occurs in project groups and consists in the fact that the group begins to consider from a certain time that it: **does not depend on the manager;** **has greater and better knowledge and skills;**

has a better understanding of how to proceed.

2	Syndrome bypass bureaucracy	This is the ability to bypass all the usual bureaucratic procedures. But, if bypassing bureaucratic procedures becomes the norm for the project group and causes their complete denial, this causes a hostile attitude from other employees. There is a reason to find fault.
3	"Disease" of an entrepreneur	This is an excessive dedication to project and inspiration for success. In this case, the decisions made in the project interests may go to the detriment of the organization. A conflict on this ground can trigger a departure from the main organization and the start of your own business.
4	Team spirit grows into passion	The project group success can be a source of great personal satisfaction for each employee of the group. There is an excessive enthusiasm for the project and colleagues. This causes apathy after the project completion and a loss of professional and personal connections.
5	Aboriginal lifestyle adopted	Performers is adopted the lifestyle of the customer. Such a change of viewpoint can lead to a blurring of the performers position, conformism in decision-making, the scale spread without defining their clear boundaries, the information leakage and the threat to the company's interests.

Group thinking leads project group members to lose their ability to critically evaluate their own:

opportunities;

actions;

their actions consequences.

Group thinking implies:

the need requirement for unanimity;

the infallibility illusion is instilled.

As a result, decisions are often not discussed and are not subjected to critical analysis. This leads to the fact that the decisions are made quickly, there is no analysis and consideration of alternative options.

The practical application of the such activities results very often ends in complete failure. This causes frustration and demoralization of the project group members.

6   Group thinking

		The manifestation of particular group thinking
1	Infallibility illusion	• Feeling invulnerable; • high sense of "the uniform honor" and caste spirit; • belief in one's own wisdom; • unreasonable optimism, allowing to feel satisfaction about any quality of their decisions.
2	Embellishment of the taken decisions	• The consequences of only some decisions are discussed; • alternative options are ignored; • the assessment of negative consequences that may be made by the taken decisions is not performed; • there is not justified and too quickly reject the alternatives in case of discussion.

3	Negative attitude towards employees who are not the project group members	• Any employee who disagrees with the decision of the group is perceived negatively; • he is credited with negative qualities, such as incompetence, envy; • his opinion does not receive serious attention.
4	Direct pressure	Apply direct pressure to the dissenter.

Table 2. Groups of measures applied at different the life cycle stages of the project group.

	Measures	Life cycle stages for action
1	Proactive measures.	The measures can be taken before the project start and in the early stages. They can also be taken at the reorganization group stage with the aim of implementing the next project.
2	Measures that are taken according to the situation.	The measures can be taken at any life cycle stage of the project group.

The activities have been developed as proactive measures, the adoption of which must be prepared before the project start or at the first the life cycle stages, shown in Table 3.

Table 3. The developed proactive measures.

	Proactive measures	Content of measures
1	Awareness.	• The detailed project schedule development with detail on tasks and staff; • the electronic reporting forms development with parameters for monitoring the current status of the tasks for each employee (Tapscott, Lowy, Ticoll & Klym, 1998); • the regulatory document development defining types and frequency of reports for various volumes and tasks types.
2	Decreased isolation.	• Finding and eliminating formal barriers, simplifying communications to interact with working on a project, and introducing new communication systems; • organization of network-wide space with a resource of development tools, reference materials and various tools.
3	Create working relationships outside the project group.	The external specialists and employees of the basic organization are invited to work and to meetings of the project group. At the same time, part of the group is going to physically, and some can participate remotely.
4	Employees testing.	• Requirements and tests for new employees and network entry. • complex test tasks for specializations, the implementation of which will reduce the time for the inclusion of an employee in the project network. • tests for psychological testing.
5	Creating a database of potential employees to attract to work	The employee database contains information in the following categories: • all previously employed employees; • all current employees; • all employees who were interviewed or remotely tested; • employees who may be considered as potential candidates, but do not meet the requirements for participation in the current project;

in the project network.	• leading experts in areas and competencies within the same territorial unit (city or town) or outside it (in the country, in the world); • IT specialists with no definite status, but meeting basic requirements; • the best students of various specialized schools and courses. This information allows you to carry out preparatory actions before you start creating a project network or setting up a resource, which reduces time and improves the quality of the result. As part of the new employee commissioning regulations, the following were developed:
6 Developing a procedure for recruiting new employees	• the general procedure for the commissioning of a new employee • tests on the subject area, key competencies; • psychological compatibility; • security line. • Starting information was prepared and provided for starting work in the following areas: • data exchange formalization; • forms and procedures for interaction with the manager and staff; • forms of solving organizational issues are defined; • instructions and technical means to ensure information security. • The procedure for signing all the necessary documents on personnel and financial issues has been developed and simplified. The procedure for introducing new employees has been developed to reduce the time it takes to test employee competencies, to pass checks through the security services, to improve the quality of staff selection, to reduce staff recruitment procedures.

It is most convenient to organize such interaction in matrix organizations for an ordinary project group, where all employees participate in many projects and maintain contact with their department. But you can invite external specialists to the project group for the network project group, involve the organization's employees in the project group meetings, and create links between the project and the main organization (Carney M, 1998).

All considered in the Table 1 states of the possible group states can be reduced to the following categories:

• isolation;
• excessive consensus.

The measures have been developed for the resulting groups of states as measures taken according to the situation, given in Table 4.

Table 4. Developed measures taken according to the situation

	State groups	Proposed measures to eliminate or compensate for the conditions complicating the interaction in the group
1	The states group when the command is isolated: • projectism; • syndrome bypass bureaucracy; • "disease" of an entrepreneur; • team spirit grows into passion; • aboriginal lifestyle adopted.	• The team isolation can be eliminated by promptly inviting external specialists to it. • Actively engaging the relevant members of the core organization in participating in project status meetings will help support communication between the project and the rest of the organization.

2	The states group with excessive like-mindedness: • group thinking: • infallibility illusion • embellishment of the taken decisions • negative attitude towards employees who are not the project group members • direct pressure.	• The manager may enlarge the functional conflict in order to reveal constructive disagreements in case of excessive agreement of the project group. • Meetings and trainings for organizing proper interaction and cohesion can also reveal counterproductive situations and redirect energy and attention to the real goals of the project.

It is obvious that most of the above circumstances, characteristics and measures to eliminate them belong to the stage of triggering employees and organizing interaction in the project group. Managers often work in less than ideal conditions without the possibility of choosing employees and under time pressure. At the same time, they need to create a solid team for successful collaboration and project execution with full involvement.

It is important to remember when working through the issues of involvement that the project group members are collected temporarily, only for the project duration. And this fact can have a divisive effect. Therefore, one of the primary manager's tasks is to develop and implement actions that will result in a high degree of involvement in the project. The importance of the involvement degrees confirmed by motivation theories.

Results and discussion

It can be said, speaking in more detail about the involvement degree in the project, that many external performers, technical staff, consultants are also included in the group work and its purpose.

The question arises how to optimally distribute the tasks among all participants in the process. You can be guided by the theory of the employees' division according to psychological types for this. According to which, each type of employee must be assigned tasks corresponding to his way of thinking. In this case, there is a high probability that they will be executed in the best way.

But it is rarely that there are any psychological types in their pure form in real life. Their qualities are mixed in various proportions as a rule. In addition, the manager often does not have the ability to select employees based on their psychological types, but is forced to work in the proposed circumstances.

Therefore, the employees' involvement is extremely important in this case, which is achieved by competent actions on motivation in turn. In this regard, it is necessary to understand the initial group state at the moment and the state to which it is necessary to lead the group, that is to assess the current and the necessary involvement degree (Zelentsova & Tikhonov, 2019).

We distinguish three groups of participants according to the involvement degree in the project. The involvement to a large extent affects the interaction quality and the ability to build new connections, as it forces one to concentrate on the project and significantly reduces the manifestation of non-constructive behavior. We present information about the involvement degree of different employees' groups in a table for easy perception (Table 5).

Table 5. Groups of participants by involvement degree in the Project

Groups of participants by involvement degree in the project.	
1	Employees who directly solve tasks within the project for its implementation. Such workers are in close contact with each other as a rule, since the solution of some tasks is impossible without their interaction.

2	Other organization employees, assisting members of the core group, but not directly involved in the project implementation and the its goals achievement.
3	Employees who influence the members of the first and second groups, as well as the process of carrying out project tasks, but who do not enter into direct cooperation with them.

At the same time, the project group members can function at different levels of the organization. Such as engineering project groups, a board of management, a managers' group involved in planning and reorganization, or even being in different organizations.

The list of activities has been developed to ensure an acceptable level of the employee involvement in the project (Table 6). The Delphi method is used to determine the acceptability degree on a scale from 0 to 100%. Employees of the company with high authority and the status of the informal leader will be involved as experts.

Table 6. Measures to increase the involvement of network project group employees in project activities

	Measures to increase the involvement of network project group employees
1	Implement measures: • holding meetings; • creating community groups; • creating a common vision of perspectives; • encouraging productive conflict; • confronting counterproductive conflict.
2	It is necessary to use such tools as: • regulations; • penalties and incentives system; • other means. • The most important tool at the manager disposal is his own behavior.
3	The project group leader needs to: • form and influence the internal group culture; • shape the reaction of the group members to changes; • form the relation to the carried-out duties; • shape the attitude to unforeseen circumstances;
4	The group leader needs to remember that employees for the project group can be recruited from different departments, from different companies, as individuals located in different cities and even countries, and are temporary. It is necessary to rally unfamiliar employees and manage them. It takes great effort and a considerable amount of time to eliminate all the negative circumstances and improve the characteristics mentioned above.

A high level of employee motivation is also needed to increase the involvement degree in the project. An employee motivation system has been developed for this (Figure 1). The development of this system consists of several steps, each of which is the basis for the next. Let's consider the general schematic diagram creation's system of motivation, reflecting the entire actions sequence. The beginning of each step is marked by a number.
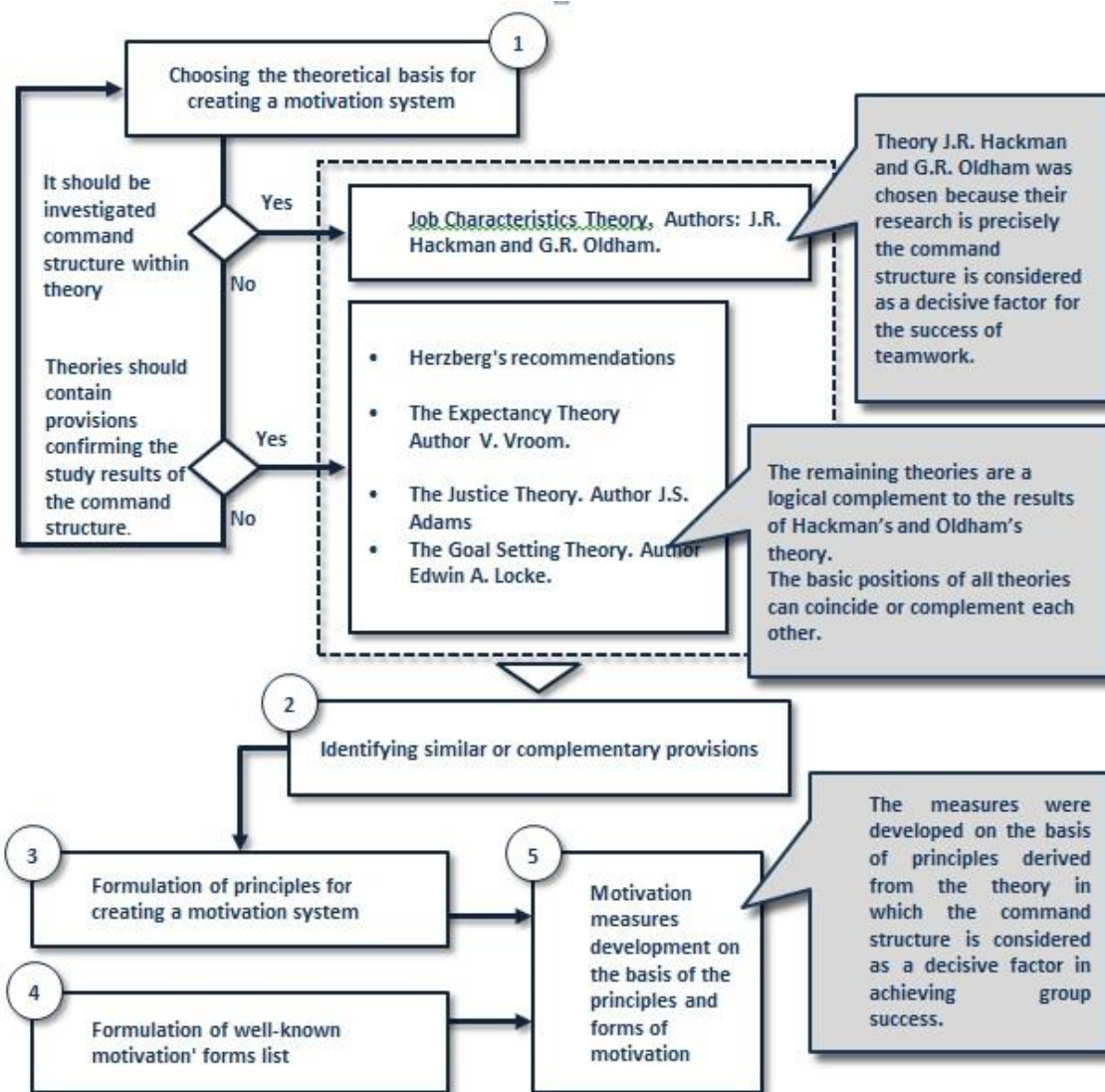
Figure 1. Schematic diagram creation's system of motivation with order and list of steps

Thus, the list of steps to create a motivation system based on the above scheme has been formulated. The names of the steps whit a detailed description are given in the table 7.

Table 7. The list of steps to create the motivation employees' system in the network project group

Steps for creating the motivation system of the network project group
1	The first step is necessary to find the motivation theory which considers the command structure as the decisive factor in the success of teamwork as the main one. Also, search and other theories that confirm the basic provisions of the first theory.
	The second step is to identify the links that are formed when the basic provisions of various motivation theories coincide or complement each other.
2	Since we are talking about the connection of the motivation theories, which considers the command structure as a decisive factor in the success of teamwork and other theories.
	Therefore, the identified links determine the directions, during the development of which it is possible to formulate the motivation principle specifically for the network project group.

3	The third step is to formulate the principles for developing the motivation system based on the identified connections. But the principles are formulated on the basis of theories as we are talking about network project groups, the main of which considers the command structure as a decisive factor for achieving success in teamwork.
4	The fourth step is needed to formulate a list of well-known motivation forms for use in the development of motivation measures.
5	The fifth step is to directly develop motivation measures based on the principles and forms of motivation obtained.
6	The sixth step is necessary to define exceptions and peculiarities of the motivation system use in the network project groups.

In the table, groups of related positions are placed in one line. The provisions are taken from the diagram, where the basic theses of different motivation theories that coincide in meaning or complement each other are displayed.

Conclusions

It has been justified the motivation system creation based on the effectiveness analysis of the network project structures, in which the foundation is to maintain the success of internal and external interactions.

The possible group states and their influence on the success of interactions have been analyzed to identify the system essence and peculiarities of the motivation of the network project group.

The proactive and current measures system of the control and response to the entire list of possible group states has been developed in order to eliminate conflict situations.

The developed technology to increase the degree of employee involvement in the project, allows you to increase the enthusiasm degree for all categories of project participants.

The proposed motivation employees' system of the network project group covers the communication and interaction features in the distributed structure and allows you to increase the incentives degree for employees in the passing the steps' sequence that increase the interest and involvement of the employees in solving project problems.

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