

PERFORMANCE MANAGEMENT MODEL FOR HIGH-TECH ENTERPRISES

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Abstract: *In the contemporary knowledge-based economy human factor is one of the core competitive advantages of high-tech enterprises. Crucial to the development and commercialisation of innovations is the development of competencies of the human resources. Substantial part of the high-tech enterprises are challenged to define precisely what are the most important competencies they need to evaluate and to reward, as well as to foster and develop further in their personnel in order to improve their performance. The aim of the paper is to suggest and analyze the role of an appraisal and performance management model. The model is aimed at helping managers evaluate effectiveness and efficiency of the personnel performance. Further, it can be used as a tool that will aid the decision making process concerning appraisal and reward, training and development, and last but not least the career growth.*

Keywords: PERFORMANCE MANAGEMENT, HIGH-TECH ENTERPRISES, INNOVATION, PERFORMANCE MANAGEMENT MODEL

1. Introduction

The transition towards knowledge based economy, as well as the European Union (EU) strategic priorities 2020 [2] challenge anew the management of modern high-tech enterprises. Creation and dissemination of new knowledge and innovations have become crucial factors to the competitiveness. The role of the human factor as a leading source and determining asset in the innovations creation and development process sets new requirements in front of the measurement of effectiveness and efficiency of research intensive labour. Due to its specific competencies the research and development (R&D) personnel plays a significant role to the business outcomes and has a substantial impact on the sustainable competitive advantage. The performance management of research intensive labour becomes an important topic in the contemporary management science that needs further development.

During the last 10 years performance management has imposed as an approach contributing to organisational effectiveness and sustainable competitive advantage, focusing on appraisal, development and retention of one of the most valuable resources in the company [1,10,11,12].

The aim of the present paper is to develop an appraisal and performance management model that will aid performance management of innovation intensive labour. This model can be used as a tool that will facilitate the decision making processes regarding appraisal and reward, training and development, and last but not least the career growth of core staff in high-tech enterprises.

2. Innovation management in high-tech enterprises

There are two approaches to define the high-tech enterprises. The first one is based on the share of research, engineering and technical personnel occupied in the industry compared to overall number in all industries. The second one is based on the expenses for R&D in comparison to the total profit as a measure of the research intensity.

Enterprises in which the personnel involved actively in research intensive labour exceeds three times the average for the country or these in which the share of R&D expenses per capita involved in research compared to the overall personnel are above the average on a national level are defined as high-tech [5].

High-tech enterprises are essential to the development of a knowledge based economy. The further development and improvement of performance management systems in high-tech enterprises fosters the productivity and the efficiency of labour thus contributing to the sustainable competitiveness.

High-tech enterprises are tightly linked to the technological innovations leading to new or improved products or services. Further, they have a significant economic impact, due to the R&D investments and above the average sales growth.

3. Performance management of the R&D personnel

Performance management is crucial to the competitiveness of high-tech enterprises. Shortage and lack of highly qualified personnel is one of the major factors constraining the innovation activity of the enterprise.

When the performance management issues are considered it is important to point out that there are various categories of personnel in business organisations, namely: key workers, supporting workers, specialists, managers etc. [11]. The personnel in high-tech enterprises engaged in research are sub-divided into researchers, technical and supporting staff [3,8,9,13]. This classification is important from the performance management point of view since the various types of personnel participate and contribute in a different way in the value creation process in the enterprise.

Competences are an important indicator for the personnel appraisal and performance management. Competencies are defined as measurable or observed knowledge, skills, abilities and behaviors, critical to the successful job performance [3,7,10,14]. Competencies are needed to ensure the effective and efficient performance of the employees and achievement of the best results for the enterprise. The personnel engaged in research belong to the group of the specialists.

The core competencies of the employees engaged in research are grouped in three areas: scientific competencies and research skills, ability to manage projects and teams and interpersonal skills. Research competencies are related to the specific scientific knowledge, the ability to acquire it, analyze and adapt to a new context or problem. The skills to manage projects and teams are essential for researchers who manage research projects or applied scientific projects [4].

The specific competencies of the personnel, engaged in the generation, creation, development and dissemination of innovations, in high-tech enterprises requires specific approach towards the performance management that will facilitate the productivity increase and improve the work efficiency. In the human management literature [15] the debated on methods and metrics and their impact on performance management of the research intensive

personnel is still ongoing. However, this managerial activity is crucial to the innovation activity of the enterprise and needs further research.

4 Performance management model

When assessing the work performance of personnel occupied in research authors suggest taking into consideration the following factors: results achieved, the collaboration during the assessment period and what competences are acquired during the job performance. The performance results evaluated are the effectiveness of employee's performance compared to the job description and duties, and the achievement of the assigned goals. Authors suggest a three level appraisal scale to be applied – low, medium and high (fig. 1). Provided a more accurate or in depth appraisal is needed to be made the scale can be five, seven or even more levels, however it should be acknowledged that this additionally complicates the evaluation process and the interpretation of the results.

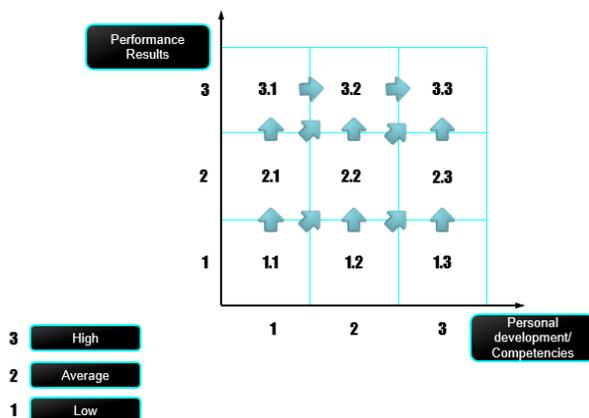


Fig. 1. Performance Management Model

This model has nine positions depending on how the employee has been assessed by his/her supervisor. In addition a comparison between the evaluation of the supervisor or a team leader, self-assessment and assessment by a third party can be made. The variations between different evaluations can be analyzed as it is in a 360 degree appraisal.

The proposed model builds on the Black Mouton leadership grid [2] impacting directly on the results, motivation and satisfaction of employees with their performance. The similarity between the two models is the drive to find a solution that will aid the improvement of the performance results, but while the Black Mouton leadership grid [2] is focused on the managerial staff of the company, the suggested new model is directed towards the assessment of the performance of the employees occupied in research activities. Changes in the behavior and the performance of employees that are beneficial to the enterprise are indicated by arrows that show the direction in which the performance of the employees should be changed in order to develop further their potential and the company growth.

The positions in the performance management model are as follows:

Position 1.1 indicates poor performance and a low level of skills, which may be considered as an indicator of a low potential for further development of the employee. In this case the employee is considered to be a potential cost to the company, and in case some measures to improve his performance and expertise are not taken it would be better to make him/her leave the company. His/her options for further development are in the direction of positions 1.2, 2.1, 2.2. Moving to position 1.2 is beneficial to the employee because it leads to further development of his/her competencies and

qualifications as a result of training, mentoring, etc., however his/her work results are still poor or unsatisfactory, and the training expenses are not justified. By moving to position 2.1 the employee improves his/her performance results. This effect can be achieved as a result of increase of motivation, good leadership or efficient team work, but this does not lead to development of new skills or competencies. The best move is towards position 2.2. This means that the employee has improved his/her and thus company performance, while improving and developing his/her skills. In a personal level this situation puts the employee in a more favourable position on the labour market.

Position 1.2 is characterized by low performance and average level of skills and potential for personal development of the employee. Moving towards positions 2.2 and 2.3 is beneficial to the employee making possible his further career growth and further personal development in the future. The suggested managerial decision is to offer additional training to the employee that will contribute to the increase of his/her productivity and the quality of work. Typically these are trainings improving the way of work and facilitating the achievement of the specific job requirements.

Position 1.3 reveals people with special qualities and potential for further development, but low performance results. The task of the manager is to find out the core reasons for these poor results and seek solutions to the problems. These employees are "question marks", because they possess all qualities and skills needed to do the job, but their performance results are unsatisfactory. The task of the manager is to find out the cases for this and to take certain actions so that such employees move to position 2.3. Often it is needed to retain these employees even if this requires some additional efforts of their supervisors or managers.

Position 2.1 represents employees with skills to cope with the work at a satisfactory level which do not possess the required competencies. These employees need additional training to acquire the knowledge and the skills needed to improve their performance results, as well as cooperation and team work. Provided such workers keep their performance level is a sign that the training is not enough and the employee needs also some additional motivation.

Position 2.2 is common case in most companies and the personnel working in them – typically these are employees with average competencies and potential for development whose performance is about the average. Usually in this case fall newly employed with average or high qualification, but without any practical experience, as well as employees who have no ambition for development and are happy with their performance reward. The last category of employees may look for security without willingness for further development or career growth. In this case they can be motivated to increase their productivity and the quality of their work using monetary instruments to increase their performance reward to a certain level and following a clearly specified bonus system. Most of the employees in this situation are stuck in their career development or close to retirement and do not see sense for further career development.

Position 2.3 requires excellent leadership skills of the management and the line managers in the enterprise. Employees following in this position perform below the level of their knowledge and skills and perform to the level so they do not fall in a lower appraisal group. In such cases a mentoring is a possible solution in order to motivate them. There are many cases when employees having the required competencies do not perform to their best not because of insufficient payment, but due to some other reason. There are other important incentives and motivators, such as providing the opportunity to improve competency, acquire new skills, receive recognition for a well done job, involvement in the decision-making. In order to be able to retain such employees and benefit from their competencies a mentoring approach is required. The

possible solutions in such cases are career development, more personal responsibility and other tools for talent development.

Position 3.1 describes cases of high performance but low competence. In this case fall people without qualifications needed, but highly motivated and committed, willing to prove themselves. People in this position should be rewarded for their efforts and achieved results, as well as they should be encouraged to develop further. Even the fact that they are top performers is beneficial for the company, and it is not necessary to plan their career development. Keeping this level of competence – performance balance is good enough for the company, however provided there is increase of their competencies is an additional bonus to the company.

Position 3.2 represents average performance and not average competencies. Employees in this position represent potential managers and leaders in the organisation. In order to develop further these employees it is needed to develop special training programme that will aid their career growth within the company.

Position 3.3 represents employees with the highest competencies who provide the best performance in the company. Such employees are ready to proceed to the next level of their career development. These are the employees with the highest potential to be next generation leaders and managers on a strategic level. In some cases if retained in the same position over a longer period of time there is a risk they become demotivated and the level of their performance might decline. Another risk is they might find another option for their career development and the company might lose them. If we make an analogy with the Black Mouton leadership grid [9] - these managers are leaders focused on task achievement and motivation of personnel, balancing the objectives of the enterprise and the satisfaction of the employees.

The performance management model can be based on a variety of criteria and can apprise quantitatively the potential of the employees and the expected value to the company in future.

The nine possible positions can get the relevant measurement using a points system (we suggest a 100 points system as most easy to understand).

An indicative distribution of the points is presented on fig. 2. The possible managerial decisions for the various positions are outlined on the right side.



Fig. 2. Rating scale

For example, if the employee receives between 0-40 points he/she must leave the organisation or be warned that this will follow provided he/she does not improve his/her performance during the next reporting period or trial period.

Between 40-50 points means some additional training is needed, in order to improve productivity and performance results.

Between 55-70 points outlines a satisfactory performance, which should be improved through motivation by appropriate bonus scheme in accordance with the abilities of the company and the personnel capacity.

Between 70-85 points means the material motivation is not enough, but some additional training and qualification would be required in order to ensure better performance and facilitate the career growth.

Between 85-100 points requires consideration of opportunities for career growth and further development, which can be both hierarchical and horizontal.

The lowest point levels correspond to the need for additional training in order to acquire new knowledge and skills in order to handle the task, followed by appraisal of the performance and material motivation for better performance and quality of work.

The highest point levels show it is needed to provide opportunities for further development, as well as work towards the retention of the best performance and the most developed competencies in order to be used by the management of the enterprise to contribute to the value creation.

4. Conclusions

The performance management model links the leadership style and the appraisal, reward and development methods in the company. The model is based on performance results, which can be quantitative or qualitative. For the research personnel in the high-tech enterprises it is quite difficult to determine the work results and the achievements. On the other hand the model is based on the acquired and developed in the process of work competencies and gives information about the potential for development of the employees. The model is meant to aid the effective and efficient human resources management of research intensive labour in high-tech enterprises. However, further analysis and development of the assessment procedure are needed in order to link the performance results and competencies and the decision making process regarding the opportunities for career development, increase of the rewards and training.

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