

The Impact of the KPI System on Employee Motivation to Improve Skills and Work Effectiveness in a Ship Management Company

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ABSTRACT: The aim of this article is to analyse the impact of the KPI (Key Performance Indicators) system on employee motivation in terms of developing competences and improving work effectiveness. The research was conducted on a sample of 114 employees using a questionnaire based on a Likert scale. The one-factor ANOVA technique was used to analyse the results. The results clearly showed that high awareness of the role of the KPI system, regular feedback, knowledge of goals and appropriate support and resources have a significant impact on the level of employee motivation to develop their own skills and improve work performance. The article discusses both theoretical aspects and practical implications of the results that can constitute a basis for improving the quality of management based on KPI indicators in a ship management company.

1 INTRODUCTION

Modern enterprises increasingly use KPI systems as a tool to measure the effectiveness of employee actions and formulate strategic goals at all levels of the organization. The KPI system is not only a method of evaluating results, but also a motivational mechanism which – when properly implemented – influences the desire to improve skills and increase work effectiveness. In the literature on the subject, we find numerous references to the role of feedback, clarity of goals and availability of resources in shaping employee attitudes. This article analyses the relationship between the level of awareness of the KPI system and the motivation to improve competences, with particular reference to practical implications for the management staff [1].

2 THEORETICAL BACKGROUND

KPI systems, by setting measurable performance parameters, enable not only the assessment of individual effectiveness, but also enable strategic planning and monitoring the organization's progress.

The literature on the subject emphasizes that appropriately selected KPIs can increase employee involvement and motivation because they enable them to better understand the requirements set by the employer and provide information on progress in achieving goals [3].

The theoretical foundations of employee motivation date back to classical management theories, such as Vroom's expectancy theory and Skinner's reinforcement theory. Contemporary research shows that motivation to improve skills is closely related to feedback, clarity of goals and availability of training resources. Implementing a KPI system that increases the transparency of performance assessment may

therefore translate into increased employee involvement in the personal development process.

3 RESEARCH METHODOLOGY

Research conducted on a sample of seafarers at PT Temas Shipping Jakarta (Setyadi A. et al., 2023) indicates that crew attitude, compliance with safety regulations and having appropriate professional competences have a significant impact on the operational efficiency of ships. These results suggest that mechanisms supporting employee competences – similar to those observed in other sectors – should be treated as a key element of motivational strategies [2].

The research was conducted in a ship management group whose activities aim to ensure the smooth operation of ships in the maritime sector they serve. The above-mentioned group consists of the following companies:

1. Miliana Shipmanagement Ltd.,
2. Leford Shipmanagement Ltd.,
3. Technical Shipmanagement Sp. z o.o.,
4. Academy Maritime Services Ltd., sp. z o.o.

The survey was conducted in 2023. 114 people out of 130 employees of Leford Shipmanagement Ltd. took part in the survey, which represents 87.69% of all employees. One survey questionnaire was rejected due to incomplete completion. The respondents were men aged 26-76. All respondents are people with Polish citizenship. 61 of them represented higher education and 53 represented secondary education. Most of them have been working on the shipmanager group's ships for over 10 years. Many of them have linked their entire career as a seaman to date with the ships of this ship management group.

The following hypothesis was put forward in this work: Taking into account the achievements of individual employees in the KPI system results in greater motivation to improve their own skills and work efficiency.

The study was conducted to verify the relationship between the functioning of the KPI system and the level of employee motivation to improve their skills and improve work effectiveness. Five main areas were included in the analysis:

- Awareness of the role of KPIs – knowledge of the performance evaluation system in the workplace.
- Regularity of feedback – the frequency of providing employees with results related to KPIs.
- Clarity of goals – awareness of what goals need to be achieved.
- Support and resources – availability of resources to improve skills.
- Motivation – assessing motivation to develop skills and improve performance.

In the survey, respondents answered questions in a Likert scale model. The questionnaire included, among others, the following questions:

- “are you aware of the role and importance of KPIs that are used to evaluate your individual performance at work?”
- “do you receive regular feedback on your performance against KPIs?”

- “do you know what specific goals you need to achieve in order to meet your job performance following KPIs?”
- “do you receive support and resources you need to improve your skills?”

4 RESULTS AND STATISTICAL ANALYSIS

Data were statistically analysed using one-factor analysis of variance (ANOVA) for independent groups. This made it possible to determine whether the differences in respondents' answers were statistically significant and to what extent factors such as awareness of the KPI system, clarity of goals or support influence motivation.

The respondents answered questions regarding awareness of the role and importance of KPIs. The distribution of responses showed that:

- 32.74% of respondents had no knowledge about the KPI system,
- 28.32% felt uncertain,
- 15.93% responded that they had only partial knowledge but could learn more,
- 19.47% said they were well informed,
- Only 3.54% responded that they were very well informed.

Table 1. Distribution of answers to the question are you aware of the role And the importance of KPIs that are used to evaluate your individual performance at work?

Analysed variables	Are you aware of the role and importance of KPIs that are used to evaluate your individual performance at work?"	
	Number	Percentage
A) Yes, I am very well informed about the KPIs related to my achievements	4	3,54
B) Yes, I am well informed about the KPIs related to my achievements	22	19,47
C) Rather yes, but I can find out more about it	18	15,93
D) No, I feel uncertain about my KPIs regarding my performance	32	28,32
E) No, I have no knowledge of KPIs regarding my achievements	37	32,75
Total	113	100

When asked about the regularity of receiving feedback on the results in terms of KPIs, the results were as follows:

- 45.13% of respondents do not receive any feedback at all,
- 27.43% receive them only occasionally,
- 20.35% report that they receive them only sometimes,
- 5.31% stated that information was provided, although more frequent updates were expected,
- Only 1.77% of respondents receive regular and detailed information.

Table 2. Distribution of answers to the question: Do you know what specific goals you need to achieve in order to meet your job performance for KPIs?

Analysed variables	Do you know what specific goals you need to achieve? To meet KPIs regarding your performance at work?	
	Number	Percentage
A) Yes, I am clear about the specific goals to achieve in order to meet the KPIs	16	14,16
B) Yes, but I would like to get more information about it	23	20,35
C) As much as possible, but I am not clear on the specific KPI goals	30	26,55
D) No, I am not well informed about the specific goals to achieve in order to meet the KPIs	40	35,40
E) I don't know what the specific KPI goals are for my achievements	4	3,54
Total	113	100

In terms of awareness of the specific goals needed to meet the KPIs, the results are as follows:

- 3.54% of respondents do not know the specific goals,
- 35.40% are not well informed about the required goals,
- 26.55% admit that they have some orientation, but they are not completely clear,
- 20.35% would like to receive more information,
- 14.16% are clear about their goals.

Table 3. Distribution of answers to the question: Are you receiving support and resources you need to improve your skills to meet your KPIs?

Analysed variables	Are you receiving support and resources you need to improve your skills to meet your KPIs?	
	Number	Percentage
A) Yes, I receive full support and resources	16	14,16
B) Yes, I receive partial support and resources	18	15,93
C) No, support and resources are limited	46	40,71
D) No, I do not receive support and resources to improve my skills	15	13,27
E) I don't know if there is adequate support and resources available	18	15,93
Total	113	100

In terms of support and availability of resources needed to improve skills:

- 15.93% of respondents receive limited support,
- 13.27% do not receive any support,
- 40.71% believe that support and resources are too limited,
- 15.93% state that they receive partial support,
- 14.16% have full access to necessary resources.

The research also allowed us to estimate the average motivation score of the respondents:

- Motivation to improve skills was on average 3.37 (standard deviation: 1.11; range of scores: 1–5).
- Motivation to improve work performance was slightly higher and amounted to an average of 3.73 (standard deviation: 1.01; range of scores also 1–5).

Based on the obtained results, one-factor ANOVA analysis was performed. This analysis allowed us to

identify significant differences between groups that differed in awareness, knowledge of goals, and level of support. The results of the analysis are presented in Table 4.

Table 4. Assessment of motivation to improve one's skills in order to meet KPI indicators (ANOVA analysis).

No.	Variables studied	F-statistic	p value
1.	Assessment of motivation to improve one's own skills - are the respondents aware of the role and the importance of KPIs.	8,1342	0,000009
2.	Assessment of motivation to improve one's own skills - do respondents know what specific goals they must achieve in order to meet the KPI Indicators?	3,839828	0,00588
3.	Assessment of motivation to improve one's skills - do the respondents receive support and resources to meet KPIs?	6,913493	0,000054
		F(4,108)	P = 0,05
		= 2,46	

The structure of the survey questionnaire concerning verification of the put forward hypothesis allowed the identification of groups of respondents with different statistical strength of the difference in their answers. For example, for the question "Are you aware of the role and importance of KPIs that are used to assess your individual performance at work?" the F statistic showed quite significant differences in the answers between the distinguished groups of respondents, because the calculated Femp. coefficient is 8.13. and is almost 4 times higher than Ftab., which for 4 degrees of freedom between groups and 108 degrees of freedom within groups is 2.46. The above ANOVA analysis results indicate a significant impact of the level of knowledge about the KPI system among employees on their motivation to improve their skills.

In turn, for the question "Do you know what specific goals you need to achieve in order to meet the KPI indicators regarding your achievements at work", the strength of the statistical difference in the answers was smaller. The empirical value of the F coefficient was 3.84 and is only twice as high as F tab. Thus, the impact of the clarity of the company's goals among employees on their motivation to improve their own skills was less differentiated between the distinguished groups.

However, for the question "Do you receive support and resources needed to improve your skills in order to meet KPIs", the strength of the statistical difference in respondents' answers increased, as the Femp coefficient is 6.91 and is more than 2.5 times higher than Ftab. . The above ANOVA analysis results indicate a significant impact of support and resources on the motivation to improve one's skills in order to meet the KPIs.

The second group of questions concerned assessment of motivation to improve work performance in order to meet KPIs. The results of the analysis in this aspect are presented in Table 5.

Table 5. Assessment of motivation to improve work efficiency in order to meet KPI indicators (ANOVA analysis)

No.	Variables studied	F-statistic	P value
1.	Assessment of motivation to improve work performance – are respondents aware of the role and importance of KPIs that are used to assess their individual performance at work?	7,666544	0,000018
2.	Assessment of motivation to improve work efficiency – are respondents aware of what specific goals they must achieve in order to meet the KPIs related to their achievements at work?	5,579567	0,000547
3.	Assessment of motivation to improve work performance – do respondents receive the support and resources needed to improve their skills in order to meet KPIs.	6,973018	0,000049
		F(4,108) = 2,46	P = 0,05

5 DISCUSSION

The difference in respondents' answers to the question "Are you aware of the role and importance of KPIs that are used to assess your individual achievements at work" also showed high statistical significance, as the Femp coefficient is 7.66 and is more than 3 times higher than Ftab. The above value of the F coefficient indicates significant differences in the assessment of motivation to improve work efficiency as a function of KPI awareness between the distinguished groups of employees.

Respondents' answers to the question "Do you know what specific goals you need to achieve in order to meet the KPIs regarding your performance at work" also differed statistically significantly between the separate groups of employees. The F statistic indicates significant differences between the studied groups, because the Femp coefficient is 5.38 and is more than twice as high as Ftab. The above analysis result indicates a strong correlation between knowledge of goals and motivation to improve work efficiency.

On the last question in this group "Do you receive the support and resources needed to improve your skills in order to improve your work performance", the respondents' answers also varied between the distinguished groups and showed statistical significance. The Femp coefficient is 6.97 and is over 2.5 times higher than Ftab. Therefore, the level of support and resources had a significant impact on the motivation to improve one's skills in terms of improving work efficiency.

The above-mentioned own research shows that higher awareness of the functioning of the KPI system, regular feedback and appropriate support and resources have significant impact on increasing employees' motivation to improve their skills and work efficiency.

In each of the analyses, it was observed that higher awareness of the functioning of the KPI system, regular feedback and full support and resources correlated with significantly higher motivation ratings both to improve skills and increase work efficiency. In particular, the group of respondents who declared good knowledge of KPIs (average 4.27) showed the

highest level of motivation, while the group feeling uncertain had significantly lower results (average 2.93).

The results of the research conducted on a sample of 113 respondents clearly indicate that the KPI system plays an important motivational role in the surveyed ship management company. Several key conclusions emerge from the analysis:

1. Awareness of KPI system:

Respondents who were well informed about the role and importance of KPIs showed significantly higher level of motivation to improve their skills. This result confirms the theoretical assumption that transparency in performance evaluation translates into greater commitment to personal development.

2. Regular feedback:

The lack of systematic feedback negatively influenced perception of the evaluation mechanism. Almost half of the respondents did not receive any information about their performance, which resulted in lower motivation ratings. Regularity of providing information is therefore a key element in the motivational process.

3. Clarity of goals:

Respondents who had clear knowledge of specific goals related to KPIs showed higher motivation both to develop competences and to improve work performance. In groups where goals were unclear or communication was insufficient, motivation levels decreased significantly.

4. Support and resources:

The availability of full support and resources for skill development is another important factor supporting employee motivation. Respondents who reported receiving full support achieved the highest motivation scores. Conversely, limited resources correlated with lower grades.

The ANOVA analysis results clearly confirm that the differences between the distinguished employee groups are statistically significant (all tests $p < 0.05$), which provides a solid basis for accepting the hypothesis that better information, support and goal clarity enhance employee motivation. These results are consistent with foreign studies, e.g. studies conducted in the shipping industry, which also emphasize the importance of employee competences and attitude in achieving high operational effectiveness.

6 CONCLUSIONS

Based on the research results, the following recommendations for management staff can be formulated:

- Education and communication: It is important to ensure proper communication of the role and function of KPIs within the organization. Regular training and information campaigns can significantly increase employee awareness.
- Feedback system: Introducing systematic and detailed feedback will enable employees to better understand their own performance and areas for improvement.
- Clarity of goals: Clearly defined goals and procedures to achieve them should be an integral part of the KPI system.

- Support of development: The organization should provide sufficient support (both financial and organizational) and resources to enable the development of employee competences.

Although the study provided valuable insights, there are some limitations, such as a relatively small sample and industry specificity. In the future, it is worth expanding the research to larger and more diverse groups of employees and including an analysis of long-term changes in the perception of the KPI system as the recommended solutions are implemented.

The presented research results clearly indicate that the KPI system, if properly implemented – with an emphasis on transparency, regular feedback, clarity of goals and full support – can significantly influence the motivation of employees to improve their skills and improve work efficiency. Statistical analyses using the ANOVA method confirm that the differences between the respondent groups are significant, which provides a strong basis for recommending the implementation of comprehensive development strategies.

In the context of dynamic changes in the labour market, taking into account the employees' opinion on the KPI system is becoming a key element that can contribute to increasing the efficiency and competitiveness of the enterprise[4].

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