



# Coal Mine Employee in the Context of the Patrick Lencioni's Teamwork Theory

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## Abstract

The nature of work organization in hard coal mines makes the group work an indispensable element of its environment. More and more often, however, in order to increase the efficiency of operations, its higher form is used - task teams. Especially in the developed project management or task-based settlement of the effects of activities. Different teams achieve different quality and speed in the implementation of tasks. Thus, one of the ways to improve the company's performance can be the rationalization of the organization of work forms in enterprises. Patrick Lencioni, as a result of many years of research, identified 5 main dysfunctions of the work teams: lack of trust in a team, fear of conflict, lack of commitment, avoiding responsibility, lack of care for results. The five dysfunctions of teamwork identified by P. Lencioni indicate some behaviors characterizing the „Z” type employee described, in the earlier publications, by the author. The author asked herself if such an employee poses a threat of occurrence of such dysfunctions and what is his attitude to work in a team of employees. The research on the identification of employees' „Z” attitudes towards teamwork was conducted among employees of Polish mining enterprises. Choosing the right size of the sample was an important issue of the survey. In order to determine the minimum sample size, a random selection was used based on a predetermined level of precision. To identify employee attitudes, a comparison of the answers obtained from the assumed pattern was used (pattern = no characteristics of „Z” type employee). To illustrate the dispersion of employee attitudes in relation to the pattern, the Mahalanobis distance was used. Then, the author investigated what attitude to teamwork and its role in the employees' team is expressed by the respondents, divided into employees with „Z” features and employees who do not show such features. The summary has contained final conclusions results of the presented research.

Keywords: coal mine, teamwork, dysfunctions, P. Lencioni's theory

## Introduction

All enterprises in any industry often offer similar services or products that are in similar price. So how can they compete with each other on the market? Where are the reasons for the differences in economic results achieved. Problems in achieving the assumed results most often result from machine and equipment failures, material shortages, but also from conflicts in teams or employee groups. It is worth noting that this last cause is rarely noticed and studied. Different teams achieve different quality and speed in the implementation of tasks (Szwarc, Bzdyra 2011). Thus, one of the ways to improve the company's performance can be the rationalization of the organization of work forms in enterprises. As a “form of work organization, a set of projects aiming at the placement of individual employees at workplaces can be accepted. This issue also includes the allocation of tasks at individual workstations, so that the production process is effective and smooth” (Przybyła, 2007).

The nature of work organization in hard coal mines makes the group work an indispensable element of its environment. More and more often, however, in order to increase the efficiency of operations, its higher form is used – task teams. Especially in the developed project management or task-based settlement of the effects of activities.

When defining what a group is, one can assume that (according to E. Schein) a group is any number of people who interact with each other (they are inter-related), are self-aware and perceive themselves as a group. It also assumes that the group as a whole has a common goal (Jemielniak, 2012). On the other hand, according to J. Adair, the team is associated with definable membership, group awareness, a sense of common purpose, mutual interdependence in achieving the goal, cooperation and the ability to act in a uniform complementary way (Adair, 2001). Although group and team expressions are often used interchangeably, there are significant differences between them. In the group, members do not have to engage in collective work. Its result is a collection of work of its members. However, in the working team there is a synergy effect. The team will only be a team then, not a group, when they consider themselves a team, they will go in a team direction and will have their own team activities. The most important difference between the team and the group is the fact that in the team, the tasks are strictly separated and there are relations between all its members. This means that when there is a lack of one person, the team loses the possibility of further effective action. This phenomenon occurs because the potential of each person is carefully planned and effectively used.

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Rys. 1. Pięć dysfunkcji w pracy zespołowej według P. Lencioniego (Lencioni, 2016)  
 Fig. 1. Five dysfunctions in team work according to P. Lencioni (Lencioni, 2016)

Patrick Lencioni, as a result of many years of research, identified 5 main dysfunctions of the work teams (Lencioni, 2016). This can be presented in the form of a pyramid (Fig. 1).

#### ***Lack of trust in a team***

If there is a lack of trust at work/in the team, employees become uncertain about their position and their activities. While at work, they struggle with constant fear of revealing their weaknesses or shortcomings. This results in uncertainty in making decisions and expressing their opinion. Then, the manager loses the chance to obtain valuable tips directly from the employees regarding the projects, tasks and general cooperation being carried out.

#### ***Fear of conflict***

The result of lack of trust is the fear of a potential conflict among team members. Employees do not express their opinion, especially if it is different from others. Group thinking phenomenon often arises (Moczyłowska, 2006). The situation in the team limits the individual in expressing their views and inhibits them from expressing alternative solutions for a given task. They push the unit to the minority position. Employees are afraid of confrontation and avoid comments. However, a well-coordinated team is open to discussions that are the basis of its success.

#### ***Lack of commitment***

The previous two dysfunctions evoke an attitude of non-commitment and passive acceptance. Lack of connection with the entrusted goals is expressed in the absence of emotional involvement in the tasks being carried out. Employees carry out the tasks entrusted, but their commitment is practically negligible.

#### ***Avoiding responsibility***

This dysfunction is associated with the lack of identification with the mission and purpose of the company. Team members do not see or do not understand the pur-

pose of their actions, they do not motivate each other, they also have difficulties in resolving problems and identifying with the project goals.

#### ***Lack of care for results***

It is commonly known that the fate of the company often depends on the results of the projects. Thus, any team member who is not interested in the results, guided by his own interests, aggravates the team's and company's results. Lack of attention to the course of work results in a poor result or even failure.

The five dysfunctions of teamwork identified by P.Lencioni (2016) indicate some behaviors characterizing the "Z" type employee described by the author (Tobór-Osadnik, 2012; Tobór-Osadnik et al., 2017). This employee was identified in three dimensions of behavior (fig. 2.):

„N” – slavery (the employee does not have to be responsible for anything, because the “authority” is responsible, he does not have to be creative, entrepreneurial),

“S” – suffering (everyday feeling of harm and oppression, total excuse for inactivity),

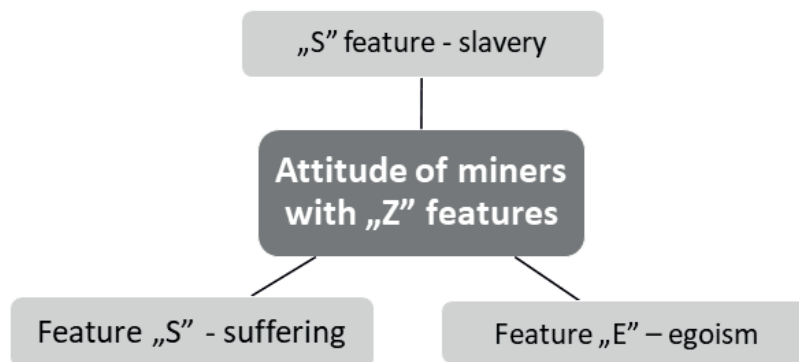
“E” – egoism (the employee is guided by his narrowly understood interest, inability to think in terms of the common good).

The author asked herself if such an employee poses a threat of occurrence of such dysfunctions and what is his attitude to work in a team of employees.

#### **Research methodology**

The research on the identification of employees' "Z" attitudes towards teamwork was conducted among employees of Polish mining enterprises.

Choosing the right size of the sample was an important issue of the survey. In order to determine the minimum sample size, a random selection was used based on a predetermined level of precision, as de-



Rys. 2. Cechy pracownika typu „Z” (opracowanie własne)  
Fig. 2. Characteristics of the “Z” type employee (own elaboration)

scribed by mathematical relationship 1:

$$n = \frac{\hat{s}^2 \cdot t_{\alpha}^2}{e^2} \quad (1)$$

where

$s^2$  – variance

$t_{\alpha}^2$  – value read off from distribution tables of t-student for confidence level  $1-\alpha$

$e^2$  – maximum permissible estimate error

Among the techniques of random, simple selection of the sample, there are many ways of direct and unlimited choice. In order to identify the Z-type employee's behavior towards teamwork, a lot of employees from the working time registration system was used. It consisted in replacing individual units with numbers which, using a random algorithm, were chosen to conduct a questionnaire, with all probability rules. The sample so selected has all the characteristics of a representative sample.

When starting to determine the minimum sample size, the  $1-\alpha$  confidence level must also be determined in advance, as well as the maximum, i.e. admissible estimation error  $e$ . In the conducted study, it was assumed that in 95% the obtained result does not deviate from the actual value, which requires the adoption of the level of significance  $\alpha=10\%$ , as a result of which, the maximum error of the estimate could also amount to 10% ( $t_{\alpha}$  value was read from the t-student distribution tables for the level  $1-\alpha/2$ , because there is a two-sided critical area). Dependence (1) takes the following form:

$$n = \frac{2,3897^2 - 1,9609^2}{0,1^2} = 186 \quad (2)$$

Therefore, it can be assumed from dependence (2) that the sample will be representative at the level of  $186 \pm 18$  correctly filled questionnaires. The employees who took part in the study were diverse in terms of age, seniority, education and position. 218 correctly filled

questionnaires were collected and this value was introduced for further statistical analysis.

To estimate the number of intervals, the following formula was used (Stanisławek, 2010):

$$k = 1 + 3,3 \cdot \log_0 n \quad (3)$$

where:  $k$  means the number of intervals and  $n$  means the size of the survey sample.

$$1 + 3,3 \cdot \log_0 218 = 6,6 \quad (4)$$

P7 variability intervals were assumed for further research. The ranges of the intervals were determined on the basis of the mathematical dependency (Starzyńska (ed.), 2009):

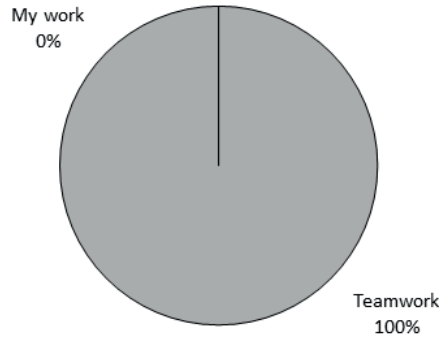
$$h = \frac{x_{\max} - x_{\min}}{k} \quad (5)$$

where:  $h$  – the range of the interval

In this manner, 7 variability intervals were estimated and determined for further analyses:

- No traits,
- Traits barely noticeable
- Noticeable traits
- Medium-significant traits
- Significant traits
- Essential traits
- Strong traits

To identify employee attitudes, a comparison of the answers obtained from the assumed pattern was used (pattern = no characteristics of “Z” type employee). The obtained variation in observed values was called dispersion and a distance measure was adopted for further analyzes, which showed that the higher the value of this dispersion, the more the values of individual observations deviate from the expected pattern (Aczel, 2010).



Rys. 3. Czy jest Pan/Pani zainteresowany/a jakością pracy zespołu, w którym Pan/i pracuje czy przede wszystkim jakością swojej pracy? Grupa: słabe nasilenie cech „Z” (opracowanie własne)

Fig. 3. Are you interested in the work quality of a team you are working in or mainly your own work quality? Group: Traits “Z” barely noticeable (individual study)

Therefore, to illustrate the dispersion of employee attitudes in relation to the pattern, the Mahalanobis distance was used, which is called the distance between two points in the n-dimensional space, which differentiates the contribution of individual components and uses the correlations between them. It finds application in statistics, in determining similarities between an unknown random vector, and a vector from a known set - a model (help from the Statistica program, 2010).

While studying the affiliation of an unknown random vector  $x$ - employee participating in the study, the similarity of the  $i$ -th vector of the  $x$ -employee response to the vector  $\mu$  of the pattern is measured, taking into account the information about variances of  $i$ -th vectors and correlations between them. The Mahalanobis distance equals the Euclidean distance when the individual  $i$ -th vectors are not correlated with each other, which is expressed by the dependence 4 (Aczel, 2010):

$$d_m(x, \mu) = \sqrt{(x_1 - \mu_1)^2 + \dots + (x_n - \mu_n)^2} \quad (6)$$

where:

$d_m(x, \mu)$  – Mahalanobis distance of the  $i$ -th response vector of the  $x$ -employee,

$x_1, \dots, x_n$  – respondent’s answers,

$\mu_1, \dots, \mu_n$  – pattern,

The calculations of Mahalanobis distance were performed in Matlab 7.1. programme, in which there was implemented a procedure of determining the degree of slavery of a surveyed worker in relation to the assumed model.

The procedure implemented in Matlab 7.1. has the following form:

```
for i=1:n,
X(:,i)=data (:,i)-idea;
C(i)=cov(X(:,i));
end
```

where:

the data table contains the answers of the interviewers, the idea table is a developed pattern,

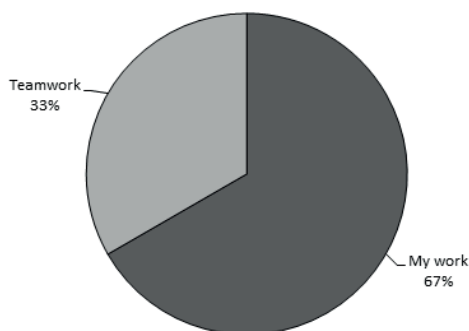
cov – entered Matlab 7.1 determining the covariance of the “data” and “idea” sets.

The developed research methodology and the author’s program written made it possible to carry out research and identification of employees with various intensity of “Z” features.

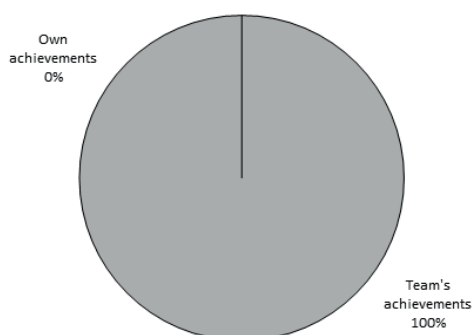
Then, the author investigated what attitude to teamwork and its role in the employees’ team is expressed by the respondents, divided into employees with “Z” features and employees who do not show such features. In addition to questions identifying these features, the questionnaire also included 4 questions about the employee’s attitude towards teamwork:

- Are you interested in the work quality of a team you are working in or mainly your own work quality?
- When your team is praised for a good job, do you feel proud of the team’s achievements or your own?
- When the team in which you work has poor results, is it embarrassing you because of your own poor work or is it the fault of the team?
- Do you think teamwork or your own work is more important?

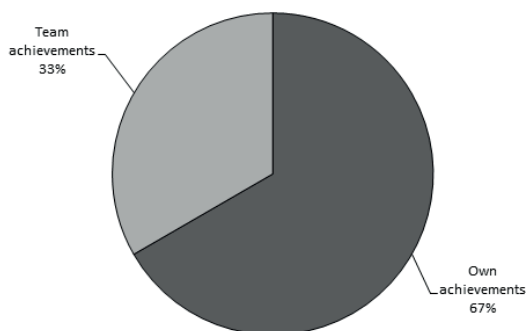
It should be noted that the results of answers to these last questions did not affect the ranking of the respondents in the variability ranges of “Z” features intensification. Thanks to this, the attitudes of the surveyed to teamwork in particular variability ranges were determined: from the employee not showing the “Z” type to the “Z” type employee”.



Rys. 4. Czy jest Pan/Pani zainteresowany/a jakością pracy zespołu, w którym Pan/i pracuje czy przede wszystkim jakością swojej pracy? Grupa: silne nasilenie cech (opracowanie własne)  
 Fig. 4. Are you interested in the work quality of a team you are working in or mainly your own work quality? Group: essential traits "Z" (individual study)



Rys. 5. Gdy Pana/i zespół jest chwalony za dobrą pracę to odczuwa Pan/i dumę z osiągnięć zespołu czy z własnych? Grupa: słabe nasilenie cech „Z” (opracowanie własne)  
 Fig. 5. When your team is praised for good work, do you feel proud of the team's achievements or your own? Group: Traits "Z" barely noticeable (individual study)



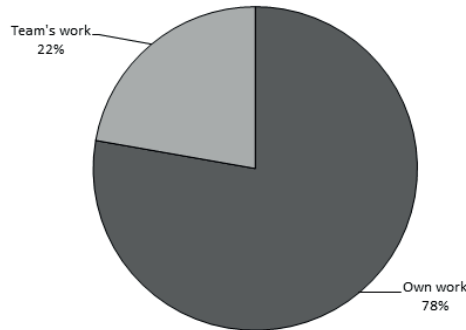
Rys. 6. Gdy Pana/i zespół jest chwalony za dobrą pracę to odczuwa Pan/i dumę z osiągnięć zespołu czy z własnych? Grupa: słabe nasilenie cech „Z” (opracowanie własne)  
 Fig. 6. When your team is praised for good work, do you feel proud of the team's achievements or your own? Group: essential traits "Z" (individual study)

### Research results

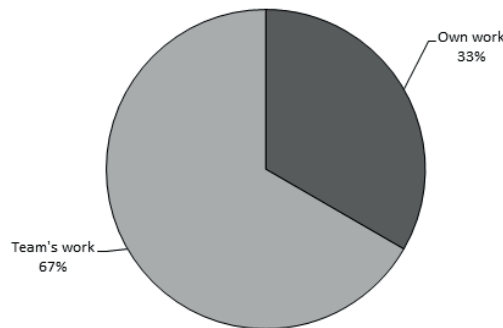
Figures 3, 4, 5, 6, 7, 8, 9, 10 present the respondents' answers in the following approach. In the first graph concerning a given question, employees with a weak intensity of "Z" features were in-

cluded. The next chart always shows the answer to the same question, but from the side of "Z" type persons.

Fig. 3 and Fig. 4 present the results of the research in relation to the question: Are you interested in the work



Rys. 7. Gdy zespół, w którym Pan/i pracuje ma słabe wyniki, to czy kępuje to Pana/Panią z powodu własnej słabej pracy czy też jest to wina zespołu? Grupa: słabe nasilenie cech „Z” (opracowanie własne)  
 Fig. 7. When the team you are working in has poor results, do you feel embarrassed because of your own poor work or is it the team’s fault? Group: Traits “Z” barely noticeable (individual study)



Rys. 8. Gdy zespół, w którym Pan/i pracuje ma słabe wyniki, to czy kępuje to Pana/Panią z powodu własnej słabej pracy czy też jest to wina zespołu? Grupa: silne nasilenie cech „Z” (opracowanie własne)  
 Fig. 8. When the team you are working in has poor results, do you feel embarrassed because of your own poor work or is it the team’s fault? Group: essential traits “Z”(individual study)

quality of a team you are working in or mainly your own work quality? Respondents with low intensity of “Z” features responded that the quality of the team’s work is important to them, but they strongly indicated that they are interested in the quality of their work.

Figures 5 and 6 present the answers of the respondents: When your team is praised for good work, do you feel proud of the team’s achievements or your own? Respondents with weak “Z” features answered that they were proud of the team’s achievements. In contrast, in the areas where employees exhibit “Z” features, the answers that they are proud of their own achievements were dominating.

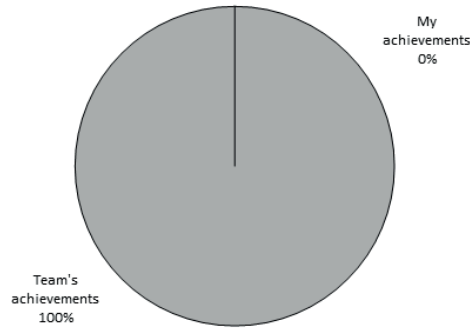
Question no. 3 was a sensitive question because of the possibility of suggesting a response: When the team in which you work has poor results, is it embarrassing you because of your own poor work or is it the fault of the team? (figures 7 and 8). The respondents with weak “Z” features mostly answered that because of their own work, and the respondents with the “Z” features indicated the fault of the team. The results of the answer to this question confirm the conclusion that

a “Z” employee is looking for his failure in external factors.

Figures 9 and 10 present the results of the answer to the question: Do you think teamwork or your own at work are more important? Employees with weak “Z” features indicated (100% of answers) that they think teamwork is more important. On the other hand, 60% of questioned employees of “Z” type gave the answer that their own achievements are more important.

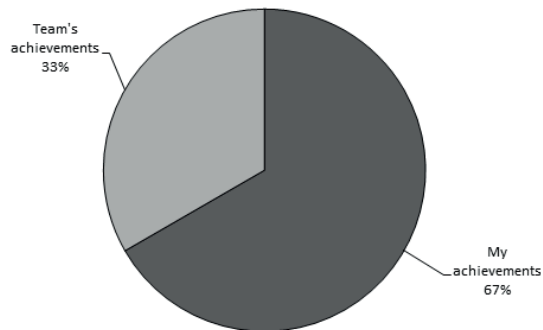
### Conclusion

Summing up the presented research results, it can be concluded that employees included in the group, which is characterized by the features of the “Z” type employee, clearly show a different perception of themselves in the work of the team. The results of the team in which they work, its achievements, are less important than their individual work, and at the same time the team is responsible for the failure at work. How does this translate into P. Lencioni’s theory of dysfunction? An employee with strong “Z” features may be the main source of the



Rys. 9. Gdy zespół, w którym Pan/i pracuje ma słabe wyniki, to czy krępuje to Pana/Panią z powodu własnej słabej pracy czy też jest to wina zespołu? Grupa: słabe nasilenie cech "Z" (opracowanie własne)

Fig. 9. In your opinion, what is more important: team achievements or individual ones at work? Group: Traits "Z" barely noticeable (individual study)



Rys. 10. Gdy zespół, w którym Pan/i pracuje ma słabe wyniki, to czy krępuje to Pana/Panią z powodu własnej słabej pracy czy też jest to wina zespołu? Grupa: silne nasilenie cech "Z" (opracowanie własne)

Fig. 10. In your opinion, what is more important: team achievements or individual ones at work? Group: essential traits "Z" (individual study)

team's frustration, lower commitment to the implementation of tasks, or creating a passive attitude. Such behaviours are consistent with the identified dysfunctions. The conscious manager should, therefore, identify well the threats to the effectiveness of the team's work not only in the working environment, but also on the part of employees showing the "Z" features. They constitute

a serious threat of work dysfunctions in this team. Skilful identification of such employees and motivation to work is therefore the basis for effective achievement of the goals set.

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*Pracownik kopalni węgla kamiennego w kontekście teorii pracy zespołowej Patricka Lencioniego*  
Charakter organizacji pracy w kopalniach węgla kamiennego sprawia, że praca grupowa jest nieodzownym elementem jej środowiska. Coraz częściej jednak w celu podniesienia efektywności działań wykorzystuje się jej wyższą formę - zespoły zadaniowe. Szczególnie w rozwijanym zarządzaniu projektami czy też zadaniowym rozliczaniu efektów działań. Różne zespoły osiągają różną jakość i szybkość w realizacji zadań. Tak więc jedną z dróg poprawy wyników działalności przedsiębiorstwa może być racjonalizacja organizacji form pracy w przedsiębiorstwach. Patrick Lencioni w wyniku wieloletnich badań określił 5 głównych dysfunkcji działania zespołów pracowniczych: brak zaufania w zespole, strach przed konfliktem, brak zaangażowania, unikanie odpowiedzialności, brak dbałości o wyniki. Wyróżnionych pięć dysfunkcji pracy zespołowej według P.Lencioniego jest podobnych do zachowań cechujących opisanego przez Autorkę, we wcześniejszych publikacjach, pracownika typu „Z”. W artykule autorka zadała sobie pytanie czy taki pracownik stanowi zagrożenie do wystąpienia takich dysfunkcji i jaka jest jego postawa do pracy w zespole pracowniczym. Badania identyfikacji postaw pracowników „Z” w odniesieniu do pracy zespołowej przeprowadzono wśród pracowników polskich przedsiębiorstw górniczych. Do określenia próby badawczej zastosowano dobór losowy na podstawie z góry określonego poziomu precyzji. Do identyfikacji postaw pracowniczych wykorzystano porównanie uzyskanych odpowiedzi od założonego wzorca (wzorzec = brak cech pracownika typu „Z”). Aby zobrazować rozproszenie postaw pracowniczych w stosunku do wzorca zastosowano odległość Mahalanobisa. Następnie Autorka badała, jaki stosunek do pracy zespołowej i swojej roli w zespole pracowniczym wyznają ankietowani w podziale na pracowników z cechami „Z” i pracowników nie wykazujących takich cech. W podsumowaniu zawarto wnioski końcowe wynikające z zaprezentowanych badań.

Słowa kluczowe: kopalnia węgla kamiennego, praca zespołowa, dysfunkcje, teoria P. Lencioniego