

## Work Environment and Productivity with Teamwork as Mediating Variable at Mining Contractor Indonesia

Resa Legowo<sup>a</sup>, Basu Prabekti Adji<sup>b</sup>, Febriadipura<sup>c</sup>, Dewi Tamara<sup>d</sup>

<sup>a,b,c</sup>Blended Learning, Business Management Program, Management Department, BINUS Business School Master Program, Bina Nusantara University, Jakarta Indonesia 11480

<sup>d</sup>Executive in Strategic Management Program, Management Department, BINUS Business School Master Program, Bina Nusantara University, Jakarta Indonesia 11480, corresponding author : dtamara@binus.edu

### Abstract

This paper aims to explain the factors that influence work productivity and how they influence it. The proposed theoretical framework highlights the work environment factors described by leaderships and training & learning mediated by teamwork depicted in team cohesiveness and team member trust. These factors further explain work productivity. The empirical validity was carried out by conducting a survey using a Likert scale type questionnaire on employees in a mining contractor company in Indonesia. The data obtained are analyzed using the Structural Equation Model. The analysis results are returned to support our theory which shows a significant and positive mediating effect of teamwork consisting of team member trust and team cohesiveness. Leadership, training & learning have a significant positive effect on team cohesiveness and team member trust and subsequently have a significant effect on productivity. This study offers important insights for organizations seeking to improve the productivity of work of employees in the organization.

**Keywords:** Leadership , Training & Learning, Team Cohesiveness, Team Member Trust, Productivity

### 1. Introduction

The company's work performance is indicated by an increase in revenue, profit, and a decrease in operating costs. Besides, Organizational performance as the driving force of the company is also an important part that plays role in supporting the company's performance. The big goal of any organization is to improve the whole work performance that can be achieved through the efficient performance of employees (Tahir, 2014). To improve organizational performance as a whole, it is important to utilize the human resource of an organization in efficient and effective ways (Hanaysha, 2016). The previous journal shows that there are many organizational factors, such as teamwork, employee empowerment, and training that can affect the performance of the employees (Bhat, 2013).

Jones (2017) revealed that teamwork allows employees to produce more desired output compared to individuals. Generally, teamwork is a group of people who want to work together to achieve a common goal (Hanaysha, 2016). It is supported by a conducive work environment with effective leadership and employee development through training and learning programs (training & learning) that enables employees to achieve their best work performance. Leadership is defined as the use of strategies for growth and development purposes by directing to offer inspiring motives to increase the potential of employees to grow and develop (Belonio, 2012). The organizations that create an atmosphere where training is needed and the employees highlight the importance of training will have more committed people (Hanif, 2013).

In the mining industry, the performances are measured by the productivity achievement of the machine operated by the operator. These heavy equipment operators carry out their duties organized by field supervisors called Group Leaders. The Group Leader is tasked with managing their work environment to create a safe, conducive, and productive situation. In carrying out their duties, the Group Leader - Group Leader interacts and collaborates so that they can support each other to overcome operational obstacles so that they can complete the assigned task properly.

## 2. Problem Statement

The research related to the relationship between teamwork and performance generally discusses the direct relationship between the aspect of teamwork as the independent variable in general on the performance. Furthermore, this general independent variable is used to predict the influence of teamwork on employee performance. It includes interpersonal skills to communication skills without focusing on the abilities or skills of team members, team member morale, recognition, and rewards as measures of teamwork that can estimate the effect of teamwork on employee performance (Phina, Chukwuma, Arinze, & Chidi, 2018)

A study conducted by Jones, Richard, Paul, Sloan in 2017 on the effects of development teams in organizations shows that employees who work in teams can produce more output. The organization must be able to make individuals in the organization able to work as a team. Teamwork is crucial in an organization, therefore a teamwork management system must be designed (Jones, 2017)

Based on the discussion above, there are enough proofs that many aspects related to the questioned topic have not been reviewed yet. In general, teamwork is positioned as the independent variable that directly influences performance as the dependent variable. It will be interesting to see how the organization creates a work environment that can encourage the thoughts to work as a team. The leader's role in managing the team and developing the team members is needed in forming a mindset to work as a team. Furthermore, good teamwork will encourage productivity. Therefore, it is necessary to make efforts and aspects that can encourage the establishment of teamwork, and then it will push the achievement of organizational goals. This study investigates the relationship between the work environment related to leaderships and training & learning towards the achievement of productivity mediated by teamwork described in team cohesiveness and team member trust.

## 3. Research Questions

Based on the discussion above, then the problems of this study are :

1. How does leadership can influence team member trust?
2. How does leadership affect the cohesive team?
3. How can training and learning affect team member trust?
4. How do training and leadership affect the cohesive team?
5. How can team member trust affect productivity?
6. How can a cohesive team affect productivity?

The objectives of the study are:

1. Determine the contribution of the work environment to perceived organizational productivity
2. Determine the contribution of the teamwork approach to perceived organizational productivity.
3. Investigate the relationship between the teamwork approach and perceived organizational productivity

## 4. Literature Review

### 4.1 Productivity

The American Productivity Center defines "productivity as a measure of the efficiency we use to produce goods and services." (Mannisto, 1980). They also describe the terms productivity, efficiency, and effectiveness as:

Effectiveness is the ability to produce the desired result (that is, to do the right thing at the right time). Efficiency or Productivity is the ratio of output per unit of input or the production ratio to invested capital and resources. (Sultana, 2012) describes productivity as the ability to achieve certain tasks according to predetermined standards of accuracy, completeness, cost, and speed. It means that employee productivity can be assessed in terms of the efficiency of an employee in performing their duties. Overall, employee productivity can be evaluated concerning an employee's output over a certain period.

Productivity is about how well the community association resources such as raw materials, labor, skills, capital, equipment, land, managerial ability, and financial capital to produce goods and services. The benefits of

## Work Environment and Productivity with Teamwork as Mediating Variable at Mining Contractor Indonesia

teamwork are substantial productivity growth in a compass that requires creative completion for a variety of tasks, a high degree of adaptation, and operational management (Vašková, 2007).

Productivity is a part of performance. It was explained by (Scott, 2018) who divides the diversity of performance into two; financial performance (such as income or expense refunds) and non-financial performance (productivity, the service quality, innovation, and personel).

Sarika and Jyosthna (2020) performed a discussion related to productivity where they put productivity as a dependant variable in their study.

Manzoer (2011) stated that there is a clear connection between teamwork and the quality and rate of productivity and work performance in the work place. Team productivity in mining operational is shown through the production performance achieved within a certain time and achieved the target of deadline.

### 4.2 Working Environment

The work environment consists of two broader dimensions such as work and context. Job includes all the different job characteristics such as how the work is performed and completed, involving tasks such as training activity assignments, control of activities related their work, a sense of accomplishment from the job, variations in tasks and intrinsic value for a task. Many research papers focus on the intrinsic aspects of job satisfaction. The results showed that there was a positive relationship between the work environment and the intrinsic aspects of job satisfaction.

Spector (1997) observed that most businesses ignore the work environment that their organization produces, and it harms the performance of their employees. According to him, the work environment consists of employee safety, job security, good relations with colleagues, recognition of good performance, motivation to perform well, and participation in the decision-making process. Furthermore, he elaborated that once employees realize that the company considers them as important, they will have a high level of commitment and a high sense of ownership for their organization.

Different factors in the work environment such as wages, working hours, autonomy granted to employees, organizational structure, and communication between employees & management can affect job satisfaction (Lane, 2010). Arnet (1999) argues that in organizations, it can be observed that most employees have a problem with their supervisors who are not giving them the respect they deserve. Supervisors also have abusive behavior which makes the employee feel uncomfortable to share good and innovative ideas with their supervisors. Furthermore, he explained that top management limited employees to their duties rather than creating a sense of responsibility on employees by making them work in teams to achieve high performance. Petterson (1998) argued that the interaction between employees in a business is critical to achieving organizational goals. He further explained that information communication must be carried out properly and promptly so that business operations will run smoothly. If there is a clash between co-workers, it will be hard to achieve organizational goals.

### 4.3 Leadership

Fry (2006) suggested the meaning of leadership as the use of strategy for growth and development purposes by offering inspiring motives to increase the potential of employees to grow and develop (Belonio, 2012). As input to the process and team performance, it is focused on the importance of leadership in the team (Gronn, Salas, & Day, 2004).

Bucic, Robinson and Ramburuth (2010) found that the leader affects the team and team performance. Leadership qualities that influence the goals' achievement include the ability to create a clear vision, to understand organizational culture, to focus on performance development, and the ability to drive innovation (Gomez, 2017).

Leadership affects employee performance. Satisfied team members are more likely to seek ways to contribute professionally to team goals. Leadership supported by the roles and responsibilities of team members is essential to team success. An effective leader will motivate, guide, inspire and challenge his team to achieve a higher success level. The importance of trust in team effectiveness is very significant, and the relationship is positive (Mickan & Rodger, 2000) besides, the basis of teamwork behavior is generated by trust and results in synergy in the organization and better performance. Successful leadership can be seen from a conducive work atmosphere.

**H1 : Leadership has a significant positive influence on Team Member Trust**

**H2 : Leadership has a significant positive impact on Team Cohesiveness**

#### **4.4 Training & Learning**

According to (Maung, Marlur, & Chemsripong., 2014) training transfer should be considered as an essential requirement for the effectiveness of training programs and the development of a real work environment. Organizations invest large sums of money in human resource development, and it is very important for the organization that faces continuous global competition to improve employees' knowledge, skills, abilities, and attitudes. (Kauffeld, Simone, & Willenbrock, 2010).

Ngirwa (2009) explains training as a comprehensive learning process in which employees increase the level of understanding, abilities, and capabilities they need to carry out their duties properly for the achievement of organizational goals. In other words, training is a learning process that primarily focuses on acquiring knowledge, improving skills, identifying rules, or correcting attitudes or behaviors to improve employee performance (Sabir, 2014).

The current existence of the organization still shows how well the employees of the organization are trained to be imaginative, productive, and consistently improve their performance and gain a competitive advantage (Falola, 2014). Training is considered an important tool to increase the performance and productivity of the organization as a whole (Hanaysha, 2016). Elnaga (2013) determined in his study that there is a significant positive relationship between training and employee performance. Studi (Raja, 2011) explained that there is a strong positive relationship between training and employee performance.

Organizations that create an atmosphere where training is needed and make the employee emphasize the importance of training, the organization will have more committed people (Hanif, 2013). Organizations do not only achieve the performance of their employees, but they also achieve job satisfaction and commitment among employees and gain a competitive advantage through the provision of appropriate and effective training. (Voegtlin, 2015). Employees who are given training according to their needs will have the mastery and job abilities of their responsibilities.

**H3 : Training & Learning has significant positive effect on Team Member Trust**

**H4 : Training & Learning has significant positive effect on Team cohesiveness**

#### **4.5 Teamwork**

Salas (1992) defines a team as a group of two or more people who dynamically, interdependently, and adaptively interact towards a valued goal/mission/goal. Each of them has been assigned to perform a limited specific function or role. membership life span (Mathiew, Heffner, Goodwin, Salas, & Bowers, 2000). Larson (1989) defines a team as a unit consisting of two or more people who coordinate and interact to complete and achieve a common and specific goal. The interactions that existed are to achieve the same goals that are defined as teamwork.

Agarwal (2016) mentioned that a team with members who help and inspire each other will promote good cooperation as a team. Besides, collaborating with other individuals also allows co-workers to recognize the importance of teamwork to their performance better. Thus, the company must encourage the view and attitude of teamwork for profit.

Kemanci (2018) writes that the effect of teamwork on improving employee performance in an era of increasing competition is non-negotiable. It increases the efficiency and effectiveness of the team. Teamwork gives the team a spirit of ownership and also enables them to make their greatest efforts towards achieving organizational performance-related goals. Also, teamwork generates differences in skills and talents, which in turn inspires and assists individual development within the team.

#### **4.6 Team Member Trust**

Smith (1997) defines that trust (trust) is associated with certain behaviors such as open communication, openness, and anticipation of the future as a consequence of this openness. Various benefits are associated with trust. These benefits are not reflected only in the team results, but also in the members' attitude towards the organization.

Mickan and Rodger (2000) argued that the importance of trust (team member trust) in team effectiveness is very significant in providing a positive relationship, and the foundation for teamwork behavior is generated by trust and produces synergy in the organization and better employee performance.

## Work Environment and Productivity with Teamwork as Mediating Variable at Mining Contractor Indonesia

Manzoer (2011) performed a study to assess the impact of teamwork on employee performance in Pakistan. They used various teamwork measures such as team member morale, team member trust, and rewards to predict the effect of these teamwork actions or the employee performance independent variables. The researchers concluded in their study that, there is strong evidence to suggest, the measure of teamwork is; the member morale, the team member trust, and appreciation have a positive and significant effect on employee performance in Peshawar province, Pakistan.

Al Salman (2016) also found that team member trust has a positive and significant effect on employee performance. Therefore, companies that aim to improve the performance of their employees must create an environment that can establish trust among their team members, and if this is done successfully, it will improve the performance of their employees as shown by their research findings.

Isik (2015) study the relationship between team trust (team member trust) and teamwork (teamwork). Survey data from about 250 workers were collected. The results show a significant and positive relationship between team trust and teamwork. Besides, there is a significant and positive relationship between team members' trust in teamwork. Furthermore, the teamwork formed will encourage organizational performance. A team that has trust among the team members will have integrity in their work, they will try their best to complete the work given and have a great sense of responsibility if they make a mistake.

### H5 : Team member trust has significant positive impact on performance

#### 4.7 Team cohesiveness

Mudrack (1989) describes the cohesiveness of the group (team cohesiveness) as a collection/group of people whose members are bound to each other in the group as a whole "sticking together". Cohesiveness is formed based on a bond of interest between individuals, enthusiasm, or a sense of belonging.

Carron (2012) illustrates that each member must have information about what the expected results have been determined. Members who clearly understand their roles and duties can cooperate and try their best to help each other to work together in a team.

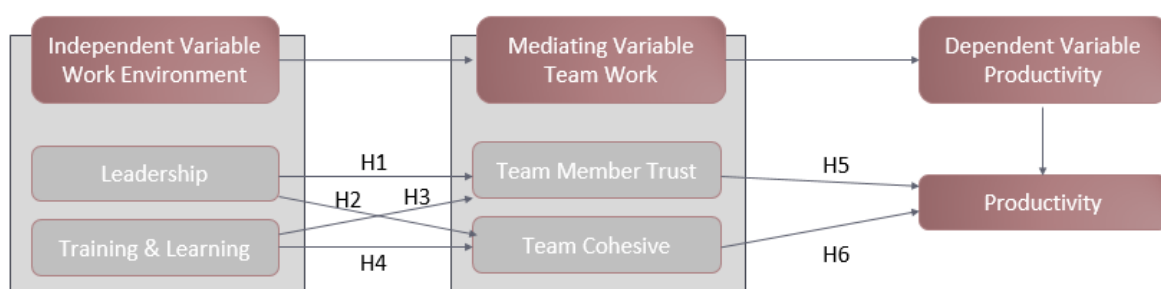
Dion (1991) in his study shows that the higher the cohesiveness (team cohesiveness), the higher the productivity of employees, and it tends to maintain group norms and easily form member participation.

Muthiaine (2014) in his research found that team cohesiveness has a significant positive effect on employee performance. Therefore, it can be concluded, from the result of the study, the organizations that are willing to improve their employee performance should make efforts to increase cohesiveness among their teams as this will lead to better performance of their employees.

Team cohesiveness can be seen from the sense of togetherness shown by team members in working, helping each other, a pleasant attitude when invited to work together, and a high sense of kinship between team members.

### H6 : Team cohesiveness has significant positive effects on performance

#### 5. Theoretical Framework



There are three variables in this study: Independent, Dependent, and Mediating. The work environment consisting of leadership and training & learning is an independent variable, productivity is the dependent variable, while teamwork consisting of team members of trust and team cohesiveness is the mediating variable. Based on the literature study above, there is an effect of the work environment, namely leadership and training & learning, which can increase productivity by being mediated by teamwork, namely team member trust and team cohesiveness.

## 6. Methodology

### 6.1 Research Design

This research is a deductive research because it was performed by studying various sources/literature as a theoretical foundation to strengthen the research. Sources/literature related to research variables are collected and studied to see the related factors to obtain a gap on which to do this research.

The information was collected through a survey so that this research was a descriptive quantitative study. Quantitative methods are used because they allow large amounts of data to be collected, and to test the appropriate hypotheses and theories to answer the questions (Creswell, 2003). This study aims to describe the relationship between activities and phenomena that occur in the work environment so that it can provide an overview of the relationship between variables, namely knowing how the work environment based on leaderships and training & learning can affect productivity (performance) mediated by team cohesiveness and the team members' trust which is the antecedent of teamwork.

Furthermore, the survey data obtained were analyzed for validity and reliability tests to ensure that the questionnaire performed was good at measuring the phenomenon under study and producing valid data. Regression analysis was used as a measure of the study (Boyle & Bluemenstein, 2014). The hypothesis test to be carried out is a statistical test using the structural equation modeling (SEM) method using SmartPLS software to see the relationship between the variables.

### 6.2 Method and Process of Proposed Sampling

The research was conducted at PT Pamapersada Nusantara with employees at the Group Leader level spread throughout the districts as the target population. When this research was conducted, there were 16 Districts scattered throughout Indonesia. Based on data from the company's Human Capital Department, there are currently 1466 Group Leaders.

The research sample is a small part of the population with characteristics that represent the entire population. Sampling in proportion is carried out by taking subjects from each stratum or each region which is determined to be balanced with the number of subjects in each stratum or region (Arikunto, 2006). The proportional amount drawn represents the representation of each site. The selection of a suitable sample size depends on the ability of the researcher, time, and finances (Khan, 2011). Sampling was carried out using a proportional random sampling method based on the number of Group Leaders in one district to the total number of Group Leaders from all districts. This method was chosen because of the distribution of the Group Leader employee population in 16 different districts. Thus, the result of the research could be more accurate in differentiating research results based on the distribution of the districts. Using this method, the number of samples to be studied is 134 people.

Subject	ABKL	ADRO	ARIA	ASMI	BAYA	BEKB	BRCB	BRCG
<b>Populations</b>	42	225	51	67	146	46	135	25
<b>Proportions</b>	3%	15%	3%	5%	10%	3%	9%	2%
<b>Number of Samples</b>	1	35	2	3	15	1	12	1

Subject	INDO	KIDE	KPCB	KPCS	MTBU	SMMS	TCMM	TOPB	TOTAL
<b>Populations</b>	128	112	34	215	96	53	59	32	1466
<b>Proportions</b>	9%	8%	2%	15%	7%	4%	4%	2%	100%
<b>Number of Samples</b>	11	9	1	32	6	2	2	1	134

**Table.1** Populasi and Samples

Data was collected through a questionnaire using the media of google form, which was sent to the WhatsApp group of the group leader in each district. The first entered data from each district is taken as a sample until it meets the quota for the sample size of each district. Before sending the questionnaire, a notification of survey data collection and a brief explanation of the aims and objectives of the research will be sent through the respective WhatsApp groups.

### 6.3 Proposed Data Collection

According to Vuong(2018) Data collection, which is the process of collecting and measuring information about variables, is carried out as input data to be processed in this study. The data used is primary data, the data

## Work Environment and Productivity with Teamwork as Mediating Variable at Mining Contractor Indonesia

is obtained through a questionnaire where a series of previously formulated written questions will be answered by respondents (McLeod, 2018).

In this study, the survey conducted to collect data was taken in a cross-sectional manner, where the method of this study was carried out in one shot study, that is, collected simultaneously. This type of study emphasizes the frequency of data collection stages, namely one-shot study or all at once because the phenomena that occurred from the variables in this study are not influenced by time travel. The phenomenon to be studied could be described factually whenever data collection is conducted.

The list of answers presented to respondents will use a Likert Scale, a psychometric scale commonly used in questionnaires and is the most widely used scale in survey research (Likert, 1932). This scale consists of 5 points, starting from Strongly Agree (5 points), Agree (4), Less Agree (3), Disagree (2), and Strongly Disagree (1). The sequence of questions uses The Funnel Approach (Berthon, Nairn, & Money, 2015), a question that starts generally and ends up with a more specific question. This is conducted to promote the convenience of respondents in answering the questions.

### 7. Result

#### 7.1 Respondent Characteristics

From the data collected for this further analysis, 100% of the respondents were previously targeted. 100% of respondents are male with a work period of 10 years and above. The following is the percentage of respondents based on the length of work period shown in table 1 below.

Length of Work (Years)	Number of Respondents	%
29	1	0,7%
23	1	0,7%
20	1	0,7%
18	2	1,5%
17	9	6,7%
16	20	14,9%
15	40	29,9%
14	14	10,4%
13	30	22,4%
12	9	6,7%
11	5	3,7%
10	2	1,5%
<b>Total</b>	<b>134</b>	<b>100,0%</b>

Table 2. Respondent Profile

#### 7.2 Analysis Test

##### 7.2.1 Structural Equation Modeling

In this study, the Structural Equation Model (SEM) will be used to test the hypothesis through the Smart PLS software. The indirect and direct effect of all construction, testing will also be carried out. The use of structural equation modeling (SEM) has been observed to be the main procedure that has been used under different regression models and methods (Baron & Kenny, 1986). It will be used to evaluate the structural relationship between exogenous and endogenous variables. Also includes factor analysis and multivariate analysis. Also, the target regression equation describes each construct to assess the causal relationship while all the factors in the causal model could show the cause and the effect in the appropriate time. Likewise, the idea of using this model ensures the application of a bootstrapping technique that has been reasonably deemed for both small and large sample sizes and does not require any indirect effects (Hayes, 2013). To examine all direct and indirect effects, a technique has been applied, known as bootstrapping (Shrout & Bolger, 2002).

##### 7.2.2 Measurement of Outer Model

The purpose of measuring the suitability of the measurement model is to study the reliability and validity of the instrument. Moreover, the convergent validity and discriminant validity tests were carried out on the Smart PLS software to check the reliability and validity.

### 7.2.3 Composite Reliability

Reliability implies stability of the questionnaire results. For the same target population, whenever the questioner reused the questionnaire it would give similar results. It shows consistency inside, as well as shows the high survey repeatability. The main measure for unwavering quality is to keep a strategic distance from injustices in research. Thus, it tends to be enhanced by testing the pursuit and investigation procedures, such as those carried out using different research and examination techniques or by different researchers. It also includes the dependence and legitimacy of exploration.

The measurement instrument reliability was evaluated by the reliability of the composite. All values are above the commonly used threshold value of 0.70. This is the approved range of reliability values. The estimation of reliability could be conducted with the degree of firmness that lies between various variables (Hair J. F., 2010). Here is a composite reliability table.

Variables Dimensions	Composite Reliability
Leadership	0,953
Training	0,887
Team Member	0,973
Team Cohesive	0,942
Productivity	0,934

Table 3. Composite Reability

### 7.2.4 Significant Loading Factors

The descriptive statistics table also states the loading used in the confirmatory factor analysis (CFA). Constructions with a load of 0.5 are considered to be strong loading variables, while constructions with loading below 0.5 are considered less preferable to be removed from the table.

It has been postulated that all the core thrusters of the designed models have a value of more than 0.70. Thus, all items support strong loading. It includes the dimension of the teamwork variable which mediates the dimensions in the work environment variable is more than 0.70 hence support strong loading. Correspondingly, on the other hand, the t value for all dependent, mediated, and independent variables are supported over 1.96 for all constructs along with sig. a value less than 0.05.

Variabels	Dimensions	Indikat ors	Leadershi p	Training & Learning	Member Trust	Team Cohesive	Productivity	
Work Environment	Leadership	LEA1	0,837					
		LEA2	0,836					
		LEA3	0,905					
		LEA4	0,922					
		LEA5	0,872					
		LEA6	0,896					
	Training & Learning	TRA1			0,783			
		TRA2			0,837			
		TRA3			0,802			
		TRA4			0,832			
Teamwork	Team Member Trust	TME1			0,915			
		TME2			0,943			
		TME3			0,947			
		TME4			0,936			
		TME5			0,958			
		TME6			0,868			



Work Environment and Productivity with Teamwork as Mediating Variable at Mining Contractor Indonesia

		<b>TME7</b>			0,839		
	Team Cohesive	<b>TCO1</b>				0,782	
		<b>TCO2</b>				0,789	
		<b>TCO3</b>				0,891	
		<b>TCO4</b>				0,876	
		<b>TCO5</b>				0,867	
		<b>TCO6</b>				0,833	
		<b>TCO7</b>				0,808	
Productivity		<b>PER1</b>					0,851
		<b>PER2</b>					0,856
		<b>PER3</b>					0,822
		<b>PER4</b>					0,900
		<b>PER5</b>					0,868

**Table 4.** Outer Loading

### 7.2.5 Convergent Validity

Convergent validity is the degree of agreement in at least two measures of similar constructs (Carmines & Zeller, 1979). Convergent validity was assessed by examining the variance mined for each factor (Fornell & Larcker, 1981). Referring to Fornell and Larcker (1981), if the extracted variance is greater than 0.5 then the convergent validity is determined and the results are drawn, the good loading but less than 0.5 is considered as less effective for the study.

Variables	Cronbach's Alpha	rho_A	Composite Reliability	Average Variance Extracted (AVE)
Leadership	0,941	0,947	0,953	0,772
Training & Learning	0,830	0,836	0,887	0,662
Team Member	0,968	0,969	0,973	0,839
Team Cohesive	0,928	0,930	0,942	0,699
Productivity	0,912	0,914	0,934	0,739

**Table 5.** Convergent Validity

### 7.2.6 Discriminant validity

Discriminant validity could be defined as any single construct if it differs from other constructs in the model (Carmines & Zeller, 1979). The results of discriminant validity are satisfactory when the AVE of the construct contains more than 0.5, which means that at least 50% of the variance is taken by the construct (Chin, 1998). Discriminant validity is established if the elements on the diagonal are significantly higher than the off-diagonal values in parallel rows and columns. A Discriminant Validity Test is conducted to see whether unrelated ideas or measurements are unrelated or not. Effective judgments of discriminant legitimacy show that the testing of an idea is not specifically linked to different tests intended to hypothetically measure different ideas. The table for Discriminant Validity is given below:

Variables	Leadership	Productivity	Team Cohesive	Team Member	Training
Leadership	0,879				
Productivity	0,467	0,860			
Team Cohesive	0,604	0,744	0,836		
Team Member	0,611	0,719	0,786	0,916	
Training	0,651	0,725	0,656	0,698	0,814

**Table 6.** Discriminant validity

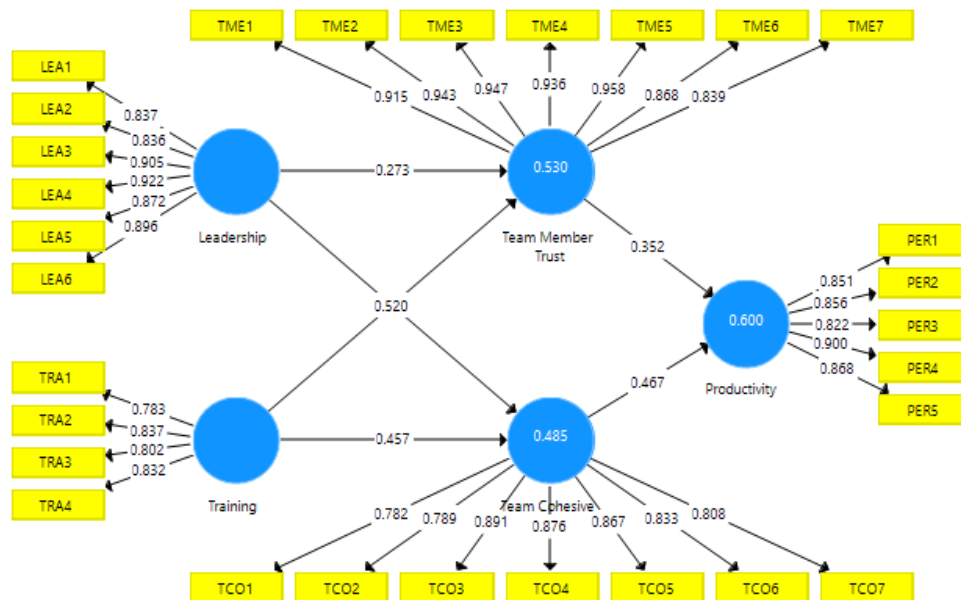
### 7.2.7 Hypothesis Testing

In PLS-SEM, bootstrapping is one of the key steps, providing the approximate factor number constant data. Sub-tests taken everywhere from the first example include substitution, in this process (Hair, Matthews, Matthews, & Sarstedt, 2017). Bootstrap provides information on the coefficient estimated stability. In this process, a large number of subsamples are taken from the original sample with replacement (Hair, Hult, Ringle, & Sarstedt, 2016). After running the bootstrap routine, SmartPLS returns the t-value for the approximate structural model derived from the bootstrap procedure. The path coefficients result for all hypotheses are shown in the following table. The t value greater than 1.96 ( $p < 0.005$ ) indicates that the relationship is significant at the 95% confidence level ( $\alpha = 0.05$ ). The path indicated whether the relationship between the measured and latent variables is significant or not.

Hypothesis	T Value	P Value
H1 : Leadership has a significant positive influence on Team Member Trust	3,236	0,001
H2 : Leadership has a significant positive impact on Team Cohesiveness	2,630	0,009
H3 : Training & Learning has significant positive effect on Team Member Trust	6,061	0,000
H4 : Training & Learning has significant positive effect on Team cohesiveness	4,740	0,000
H5 : Team member trust has significant positive impact on performance	3,264	0,001
H6 : Team cohesiveness has significant positive effects on performance	4,955	0,000

**Table 7.** T Value and P Value

The table shows that all alternative hypotheses from H1 to H6 are accepted, indicating the strong empirical validity of the research theory. Where all the dimensions in the environment variable have a positive effect on all dimensions in the teamwork variable. Also, all dimensions in the teamwork variable have a positive and significant effect on the productivity variable.



**Picture 2.** Model Test Diagram

Work Environment and Productivity with Teamwork as Mediating Variable at Mining Contractor Indonesia

Hypothesis	Standard Deviation (STDEV)	T Values	P Values	Decision
Leadership -> Team Cohesive -> Productivity	0,056	2,543	0,011	Supported
Training -> Team Cohesive -> Productivity	0,069	3,079	0,002	Supported
Training -> Team Member -> Productivity	0,071	2,595	0,009	Supported
Leadership -> Team Member -> Productivity	0,044	2,205	0,028	Supported

**Table 8.** Decisions

The table above shows that team member trust and team cohesiveness effectively mediate the impact of leadership and training & learning on productivity.

**8. Discussion**

This study tested 6 (six) hypotheses that are null hypotheses and no other relationship was found or rejected.

The first hypothesis of this study is that leadership has a significant positive effect on the Team Member Trust. The results show full support for the hypothesis and the null hypothesis is accepted. (Bucic, Robinson, & Prem Ramburuth, 2010) found that leaders have an influence on the team and that the leadership style of the leader (transformational, transactional, or ambidextrous) is very important for team-level learning and performance. In the field, the leadership style of the Group Leader has a positive influence on the confidence of the team members in completing work. Leadership qualities that affect the achievement of goals include the ability to create a clear vision, the ability to understand organizational culture, the ability to focus on performance development, and the ability to drive innovation (Gomez, 2017).

The second hypothesis of this study is that leadership has a significant positive effect on Team cohesiveness. The result shows that the null hypothesis is accepted. Leadership style affects employee satisfaction and employee performance. Satisfied team members are more likely to seek ways to contribute professionally to team goals. A transformational leadership style supported by well-defined roles and responsibilities of team members is essential for team success. An effective leader will motivate, guide, inspire, and challenge his team to achieve higher levels of success. The importance of trust in team effectiveness is very significant and the relationship is positive (Mickan. S, 2000), and that the basis of teamwork behavior is generated by trust and results in synergy in the organization and better employee performance. In this study, Leadership has the least effect on the Team cohesiveness dimension. This is indicated by the T Stat value of 2.63, which is the lowest score among other hypotheses. The value of P Values also shows the same trend, 0.009, which is also the least number among other hypotheses. In a working environment in a mining contractor company where teamwork is important to note in achieving work targets, the Group Leader leadership model fosters trust between members, so that team harmony is created. However, the teamwork system that alternates team members simultaneously causes leadership to have the least impact on Team cohesiveness.

The third hypothesis of this study is Training & Learning have a significant positive effect on Team Member Trust. The results show full support for the hypothesis and the null hypothesis is accepted. (Ngirwa, 2009) describes the training as a comprehensive learning process in which employees increase the level of understanding, abilities, and capabilities they need to carry out their duties properly for the achievement of organizational goals. In other words, training is a learning process that primarily focuses on acquiring knowledge, improving skills, identifying rules, or correcting attitudes or behaviors to improve employee performance (Sabir, 2014). This third hypothesis has the greatest influence in shaping the team members' trust in executing their work. It is indicated by the largest T Stat value is 6,061 which has the largest number among the other T Stat values, and the smallest P Values value is 0. This shows that employees who have gone through training and learning processes will build the trust of other team members towards the employees. Group Leaders who have more competence or have received training get more trust from their subordinates to complete the work in their team.

The fourth hypothesis of this study is Training & Learning have a significant positive effect on Team cohesiveness. The result shows that the null hypothesis is accepted. An organization will have more committed people when the organizations create an atmosphere where training is needed and employees attach importance to training (Hanif, 2013). The Organization not only achieve the performance of their employees but they also achieve job satisfaction and commitment among employees and gain a competitive advantage through the provision of appropriate and effective training (Voegtlin, 2015). The training system that has been implemented

well by this company makes the resulting team quite synergistic in carrying out their work. Trained group leaders and Operators who have full competence could be the link that makes team cohesiveness build well.

The final step in the analysis is an examination of the Team Member Trust and Team cohesiveness dimensions of Productivity. The results of this study indicate that these two dimensions have a significant effect on productivity, the null hypothesis is accepted.

The fifth hypothesis of this study is that Team Member Trust has a significant positive effect on Productivity. The results show full support for the hypothesis and the null hypothesis is accepted. (Mickan. S, 2000) argues that the importance of trust (team member trust) in team effectiveness is very significant in providing a positive relationship; and the basis for teamwork behavior, the synergy in the organization, and the better employee performance are generated by the trust. In the mining contractor companies studied, the trust between team members and Group Leader was able to foster greater incentives to take the initiative in making improvements, without tightly controlled by the Group Leader. Maturity in acting and being responsible creates better productivity among other teams.

The sixth hypothesis of this study is that Team cohesiveness has a significant positive effect on Productivity. Having the second largest order of the other hypotheses with the T Stat value of 4.955, it shows full support for the hypothesis, and the null hypothesis is accepted. (Dion., 1991) in his study, he showed that the higher the cohesiveness (team cohesiveness), the higher the employee productivity, tend to maintain group norms, and easily form member participation. In field behavior, team cohesiveness is shown by more intense interaction between team members, both in terms of work and making activities outside of work, such as having meals together, intimacy events that foster cohesiveness. The result in their work is they could lead to better productivity. The working period of the respondents, most of whom are between 13-16 years of work, makes them well acquainted with the character of this company, hence, solidarity has been well built.

## 9. Conclusion

This study aims to explore the impact of the work environment's influence on productivity mediated by teamwork. Tests were carried out on related dimensions, including the impact of leadership on Team Member Trust and Team cohesiveness, Training & Learning on Team Member Trust and Team cohesiveness, Team Member Trust on Productivity, and Team cohesiveness on Productivity.

The results of this study indicate that the training & learning and leadership variables have a positive effect on productivity, which means that an increase in one of the variables causes an increase in team member trust and team cohesiveness as well, as a mediating variable in increasing productivity.

This study concludes that employees need training & learning to be able to complete their work well, as well as the leadership of leaders so that they could manage the team, could make employees motivated and enthusiastic in carrying out their duties. Also, the spirit of mutual help, mutual interaction, and personal closeness could foster cohesiveness so that it becomes a driving factor to work more productively. The findings of the study have practical implication potentials for leaders and employees to build mutual understanding and build a team atmosphere that is beneficial to both. Clear and measurable delegation of tasks, direction, and leadership guidance in solving problems could create an atmosphere of mutual trust and team cohesiveness. Therefore, the mutual trust that arises between team members and the cohesiveness created will be able to encourage them to become productive employees. The organization must actively seek out and find solutions as soon as possible for any problems occurred in the team, whether they are working as desired both individually and as a team. The organization must provide training to improve their abilities as soon as possible if needed.

The current study presents a range of implications for team dynamics. The results showed that teamwork in the form of team member trust and team cohesiveness could affect productivity. To create good teamwork, it requires employees who have good abilities through training & learning, as well as good leadership factors in managing the team so that a conducive atmosphere is created. The teamwork created will encourage the team to have high productivity. This study also provides an overview in assessing factors that could increase team productivity, namely the role shown by leadership, training & learning in creating team member trust and team cohesiveness in improving employee performance which ultimately increases team productivity.

## References

- [1] Abdulle, A., & Aydintan, B. (2019). The Effect of Teamwork on Employee Performance in Some Selected Private Banks in Mogadishu Somalia. *İŞLETME ARAŞTIRMALARI DERGİSİ JOURNAL OF BUSINESS RESEARCH TURK*.

Work Environment and Productivity with Teamwork as Mediating Variable at Mining Contractor Indonesia

- [2] Agarwal, S. &. (2016). Impact of Teamwork on Organizational Productivity in Some Selected Basic Schools in the Accra Metropolitan Assembly. . *European Journal of Business, Economics, and Accountancy*, 4(6), 40–52.
- [3] Ajibade, O. S. (2014). Investigating the effect of training on employees' commitment: An empirical study of a discount house in Nigeria. *Megatrend revija*, 11(3), 7-18.
- [4] Akintayo, D. I., Ajibola, K. S., & Solomon, O. T. (2020). Teamwork Approach and Perceived Organizational Productivity in National Control Centre (NCC), Osogbo, Osun State, Nigeria. *Research Gate*.
- [5] Al Salman, W. &. (2016). Impact of Effective Teamwork on Employee Performance. *International Journal of Accounting and Business Management*, 4(1), 76–85.
- [6] Arikunto, S. (2006). *Prosedur Penelitian : Suatu Pendekatan Praktik (Revisi VI)*. Jakarta : Rineka Cipta.
- [7] Arnetz, B. (1999). Staff perception of the impact of health care transformation on quality of care. . *International Journal for Quality in Health Care*, 11(4), , 345-51.
- [8] Asika, P. J. (2001). The techniques of affective methodology, & normative commitment to the organization. *Journal of Occupational Psychology*, 6(3), 1-18.
- [9] Banerjee, A. C. (2007). Statistics without tears-inputs for sample size calculations. *Indian Psychiatr Jr*, 16, 150-2.
- [10] Banwo, A. O. (2015). The Impact of Group Cohesiveness on Organizational Performance: The Nigerian Case. . *International Journal of Business and Management*, 10(6), 146–154.
- [11] Baron, & Kenny. (1986). The moderator-mediator variable distinction in social psychological research: Conceptual, strategic, and statistical considerations. *Journal of Personality and Social Psychology*, 51(6), 1173-1182.
- [12] Belonio, R. (2012). The Effect Of Leadership Styleon Employee Satisfaction And Performance Of Bank Employees In Bangkok. *gsbejournal*, 111-116.
- [13] Benrazavi, S. R. (2013). Employees' job satisfaction and its influence on willingness to work in teams. *Journal of Management Policy and Practice*, 14(1), 127.-140.
- [14] Berthon, P., Nairn, A., & Money, A. (2015). Through the Paradigm Funnel: A Conceptual Tool. *Marketing Education Review* 13:2, 56-57.
- [15] Bhat, Z. (2013). Impact of Training on Employee Performance : A Study of Retail Banking Sector in India. *Indian Journal of Applied Research*.
- [16] Boyle, & Bluemenstein. (2014). *SPSS: Correlations and Related Procedures*, THE UNIVERSITY OF AUCKLAND. Retrieved from [https://www.library.auckland.ac.nz/student-learning/content/files/slc/computer\\_spss\\_correlations\\_and\\_related\\_procedures.pdf](https://www.library.auckland.ac.nz/student-learning/content/files/slc/computer_spss_correlations_and_related_procedures.pdf):  
[https://www.library.auckland.ac.nz/student-learning/content/files/slc/computer\\_spss\\_correlations\\_and\\_related\\_procedures.pdf](https://www.library.auckland.ac.nz/student-learning/content/files/slc/computer_spss_correlations_and_related_procedures.pdf)
- [17] Bucic, T., Robinson, L., & Prem Ramburuth. (2010). Effects of leadership style on. *Journal of Workplace Learning* 22 (4), 228 - 248.
- [18] Carmines, E. G., & Zeller, R. A. (1979). *Reliability and Validity Assessment*.
- [19] Carron, A. V. (2012). Cohesion Conceptual and Measurement Issues. *Small Group Research*, 43(6), 726-743.
- [20] Chin, W. W. (1998). The Partial Least Squares Approach to Structural Equation Modeling. *Advances in Hospitality and Leisure* 8(2).
- [21] Creswell. (2003). RESEARCH DESIGN Qualitative, Quantitative. and Mixed Methods Approaches. *International Educational and Professional Publisher Thousand Oaks*, (pp. 5-26).
- [22] Dion., E. C. (1991). Group Cohesion and performance: A Meta-Analysis. *Small Group Research*, 22(7), 175-186.
- [23] Donald Cooper, P. S. (2013). *Business Research Methods*. Richard D, Edisi 12.

- [24] Eckler, A. R. (1961). The continuous population and labour force survey in the United States. Family Living Studies. *International Labour Office, Geneva*.
- [25] Eisingerich, A. B. (2010). Drivers of Brand Commitment: A CrossNational Investigation. *Journal of International Marketing*, 18(2), 64–79.
- [26] Elnaga, A. &. (2013). The effect of training on employee performance. . *European Journal of Business and Management*, 5(4), 137-147.
- [27] Falola, H. O. (2014). Effectiveness Of Training And Development On Employees'performance And Organisation Competitiveness In The Nigerian Banking Industry. *Bulletin of the Transilvania University of Brasov. Economic Sciences.*, Series V, 7(1), 161.
- [28] Ferdinand A. (2002). Structural Equation Modeling dalam Penelitian Manajemen,. *FakultasEkonomi UNDIP, Semarang*.
- [29] Fornell, & Larcker. (1981). Evaluating structural equation models with unobservable variables and measurement error. *Journal of Marketing Research*, 18(1), 39–50.
- [30] Fry, L. W. (2006). Spiritual leadership as an integrating paradigm for positive leadership development. . *International Gallup Leadership Summit, Washington, DC*.
- [31] Gazioglu, S. &. (2006). Job Satisfaction in Britain: Individual and Job Related Factors. . *Applied Economics*, 38(10) , 1163-1171.
- [32] Ghozali, I. (2009). *Aplikasi Analisis Multivariate dengan Program SPSS*. Semarang: UNDIP.
- [33] Ghozali, I. (2011). *Aplikasi Analisis Multivariate Dengan Program SPSS*. Semarang: Badan Penerbit Universitas Diponegoro.
- [34] Gomez, C. (2017). The Impact of Leadership Style on Performance. hal. [www.bizfluent.comhttps://bizfluent.com/info-7790214-impact-leadership-style-performance.html](https://bizfluent.com/info-7790214-impact-leadership-style-performance.html).
- [35] Gronn, P., Salas, E., & Day, D. (2004). Leadership capacity in teams, *The Leadership Quarterly. Themedfomscu*, 858-880.
- [36] Hair, J. F. (2010). *Multivariate data analysis: Pearson College Division*.
- [37] Hair, J. F., Matthews, L., Matthews, R., & Sarstedt, M. (2017). PLS-SEM or CB-SEM: updated guidelines on which method to use. *International Journal of Multivariate Data Analysis 1(2)*, 107.
- [38] Hair, J., Hult, G. T., Ringle, C., & Sarstedt, M. (2016). *A Primer on Partial Least Squares Structural Equation Modeling (PLS-SEM)*, 2nd edition. *SageISBN: 9781483377445*.
- [39] Hanaysha, J. (2016). Testing the Effects of Employee Empowerment, Teamwork, and Employee Training on Employee Productivity in Higher Education Sector. . *International Journal of Learning and Development*, 6(1), 164-178.
- [40] Hanif, F. (2013). Impact of training on employee's development and performance in hotel industry of Lahore, Pakistan. . *Journal of business studies quarterly*, 4(4), 68-82.
- [41] Hartenian, L. S. (2003). Team member acquisition of team knowledge, skills, and abilities. *Team Performance Management. An International Journal*.
- [42] Hayes. (2013). Methodology in the social sciences.Introduction to mediation, moderation, and conditional process analysis: A regression-based approach. *American Psychological Association* .
- [43] Holger Dette, S. D. (2001). Analysis of Variance in Nonparametric Regression Models. *Journal of Multivariate Analysis*.
- [44] Hox. J. J, B. H. (2005). Data Collection, Primary vs. Secondary. *Encyclopedia of social measurement*, Volume 1, pp. 593-599.
- [45] Isaac Mwita, J. (2000). Performance management model: A systems-based approach to public service quality. *International Journal of Public Sector Management*.
- [46] Isik, M. T. (2015). The Relationship between Teamwork and Organizational Trust. . *International Journal of Research in Business and Social Science (2147- 4478)*, 4(1), 113-132.
- [47] Jacqueline, F. N. (2014). Employee empowerment and job satisfaction. *Researchjournal's journal of human resource*.

Work Environment and Productivity with Teamwork as Mediating Variable at Mining Contractor Indonesia

- [48] Jones, A. R. (2017). Effectiveness of Team Building in The Organization. *Journal of Management*.
- [49] Kauffeld, Simone, & Willenbrock, N. (2010). Sales Training: Effects Of Spaced Practice And Training Transfer. *Journal Of European Industrial Training Vol. 34 No. 1*, pp: 23-37.
- [50] Kemanci, G. (2018). ). Investigating the Impact of Esprit De Corps/Team Spirit on Employees Performance in the University of Abuja Teaching Hospital, Gwagwalada, Abuja. *Nile Journal of Business, and Economics (NileJBE)*, (April), 36–47.
- [51] Khan, R. A. (2011). Impact of training and development on organizational performance. . *Global Journal of Management and Business Research*, 11(7), , 62-68.
- [52] Khan, A. R., & Siddiqui, D. A. (t.thn.). Employee Empowerment, Teamwork and Training as Antecedents of Transformational Leadership and its subsequent effect on Organizational Commitment.
- [53] Lane, K. E. (2010). A study of nurse faculty job satisfaction in community colleges in Florida. . *Teaching and Learning in Nursing*, 5(1), 16-26.
- [54] Larson, C. E, L. F. (1989). Effect of teamwork on employee performance. *International Journal of leaning and development*, Vol2, No1, 110-126.
- [55] Likert, R. (1932). A Technique for the Measurement of Attitudes. *Archives of Psychology*, 140, 1–55.
- [56] Lott, A. J. (1965). Group cohesiveness as interpersonal attraction: A review of relationships with antecedent and consequent variables. . *Psychological bulletin*, 64, 259-309.
- [57] Mannisto, M. (1980). An Assesment of productivity in health care. *Hospitals*, 71.
- [58] Manzoer et al, M. O. (2011). Effect of Teamwork on Employee Performance. *Macrothink Institute*.
- [59] Mathiew, Heffner, Goodwin, Salas, & Bowers, C. (2000). , The Influence of Shared Mental Model on Team Process and Performance. *Journal of Applied Psychology*. Vol. 85, No. 2, 273-283.
- [60] Maung, Marlar, K., & Chemsripong., S. (2014). Work Enviroment Factors Influence On Transfer Of Training In Myanmar. *South East Asia Journal of Contemporary Business, Economics And Law Vol. 4, Issue 1 (June)*, ISSN 2289-1560.
- [61] McLeod, S. A. (2018). Questionnaire: definition, examples, design and types. *Simply Psychology*.
- [62] Mickan, S., & Rodger, S. (2000). Characteristics of effective teams: A literature review. *Australian Health Review*, 201-208.
- [63] Mudrack, P. (1989). Group cohesiveness and productivity: A closer look. *Human Relations*, 42(9), 771-785.
- [64] Muthiaine, M. C. (2014). Relationship Between Team Cohesion and Sports Performance Among Basketball Teams in The 2010 National League in Kenya. *Graduation Thesis. Kenyatta University*.
- [65] Ngirwa, C. (2009). Human Resource management in African Work Organization. *National Printing Co. Ltd, Dar es Saalam Vol. I. .*
- [66] Petterson, I. a. (1998). ). Psychological stressors and well-being in health careworkers: the impact of an intervention program . *Social Science and Medicine*. Vols. 47(11), 1763–72.
- [67] Phina, N. A. (2018). The Effect of Teamwork on Employee Performance:. *International Journal of Contemporary Applied*, 174-194.
- [68] Phina, O. N., Chukwuma, E. D., Arinze, A., & Chidi, O. (2018). THE EFFECT OF TEAMWORK ON EMPLOYEE PERFORMANCE: A STUDY OF MEDIUM SCALE INDUSTRIES IN ANAMBRA STATE. *International Journal of Contemporary Applied Researches*.
- [69] Prof. Dr. Winarno Surakhmad, M. S. (1994). *Pengantar Penelitian Ilmiah Dasar Metoda Teknik*. Tarsito Bandung.
- [70] Purcell, J. (2003, October). Strategy and Human Resource Management. *Management Decision*, hal. 57(1).
- [71] R, P. (2014). 3 Types Of Survey Research, When To Use Them, And How They Can Benefit Your Organization. Available through: <http://fluidsurveys.com/university/3-types-survey-research-use-can-benefit-organization>.

- [72] Raja, A. G. (2011). Impact of Training and Development on Organizational Performance. *Global Journal of Management and Business Research*, 11(7).
- [73] Randolph, W. A. (1995). Navigating the journey to empowerment. *Organizational dynamics*.
- [74] Sabir, R. I. (2014). Impact of training on productivity of employees: A Case study of electricity supply company in Pakistan. *International Review of Management and Business Research*, 595.-606.
- [75] Saifullah, N. A. (2015). Job satisfaction: A Contest between human and organizational behavior. *International Journal of Economic Research*.
- [76] Salas, E, D. T. (1992). Toward an understanding of team performance and training. *Teams: Their training and performance*, 3-29.
- [77] Sanyal, S., & Hisam, M. W. (2018). The Impact of Teamwork on Work Performance of Employees: A Study of Faculty Members in Dhofar University. *Research Gate*.
- [78] Sarika, C., & Jyosthna, K. (2020). A STUDY ON EFFECTIVENESS OF TEAM WORK. *Mukt Shabd Journal*, 1447.
- [79] Sarika, M., & Jyosthna, M. (2020). A STUDY ON EFFECTIVENESS OF TEAM WORK AND THE IMPACT OF ORGANISATION PRODUCTIVITY. *Mukt Shabd Journal*.
- [80] Scott, M. (2018). Teamwork structures and worker perception: a cross national study in pharmaceuticals. *International Journal of Human Resource Management*, 16(2), 256-276.
- [81] Sekaran, U. d. (2013). *Research Methods for Business: A skill building approach*, Edisi keenam.
- [82] Sharif, A. M. (2002). Benchmarking performance management systems. *Benchmarking: An International Journal*.
- [83] Shrout, P. E., & Bolger, N. (2002). Mediation in Experimental and Nonexperimental Studies: New Procedures and Recommendations. *Research Gate, Psychological Methods* 7(4), 422-45.
- [84] Skalli, A. T. (2008). ). Jobs as Lancaster Goods: Facets of Job Satisfaction and Overall Job Satisfaction. *The Journal of Socio-Economics*, 37(5), 1906–1920.
- [85] Smith, J. a. (1997). The effects of organizational differences and trust on the effectiveness of selling partner relationships. *Journal of Marketing*, Vol. 61, 3-21.
- [86] Spector, P. (1997). *Job satisfaction: Application, assessment, causes and consequences*, Thousand Oaks, CA., Inc (Vol. 3). *Sage Publications*. .
- [87] Sultana, A. I. (2012). Impact of training on employee performance: A Study of telecommunication sector in Pakist. *Interdisciplinary Journal of Contemporary Research in Business*, 646-661.
- [88] Sung, S. Y. (2014). Do organizations spend wisely on employees? Effects of training and development investments on learning and innovation in organizations. . *Journal of organizational behavior*, 35(3), 393-412.
- [89] Tahir, N. Y. (2014). The Impact of Training and Development on Employees Performance and Productivity. A case study of United Bank Limited Peshawar City, KPK, Pakistan. *International Journal of Academic Research in Business and Social Sciences*.
- [90] Tohidi, H. (2010). Teamwork productivity & effectiveness in an organization base on rewards, leadership, training, goals, wage, size, motivation, measurement and information technology. *Elsevier*.
- [91] Vašková, R. (2007). Research on Teamwork and High Performance Work Organization, European Observatory of Working Life . ([www.eurofound.europa.eu](http://www.eurofound.europa.eu)).
- [92] Voegtlin, C. B. (2015). How to empower employees: using training to enhance work units' collective empowerment. *International Journal of Manpower*, 36(3), 354-373.
- [93] Vuong, Q.-H., La, V.-P., Vuong, T.-T., Ho, M.-T., Nguyen, H.-K. T., Nguyen, V.-H., . . . Ho, M.-T. (2018). An open database of productivity in Vietnam's social sciences and humanities for public use. *Scientific Data*. 5.
- [94] W, C. J. (2003). RESEARCH DESIGN Qualitative, Quantitative. And Mixed Methods Approaches, International Educational And Professional Publisher Thousand Oaks, . pp. 5-26.



Work Environment and Productivity with Teamwork as Mediating Variable at Mining Contractor Indonesia

- [95] Wallace, K. (2008). Online anonymity K. Himma & H. Tavani (Eds.). *The handbook of information and computer ethics*, New York: Wiley.
- [96] Worley, P. (2015). "Open thinking, closed questioning: Two kinds of open and closed question" . *Journal of Philosophy in Schools*.
- [97] Zeithaml, V. A. (1988). Communication and control processes in the delivery of service quality. *The Journal of Marketing*.