

**INFLUENCE OF WORKER'S OCCUPATIONAL SAFETY AND
HEALTH KNOWLEDGE TO INCREASE WORK SAFETY IN PT.
GANDING TOOLSINDO**

THESIS

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Department of Industrial Engineering
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In the name of Allah, I hereby certify that this research is based on my own work and studies, except for the citations and summaries in which of those is explicitly knowledge. If in the future this statement is proved not right and violates the legal regulation of papers and intellectual property rights, I agree Universitas Islam Indonesia to revoke my bachelor certificate.

Yogyakarta February 26th 2018



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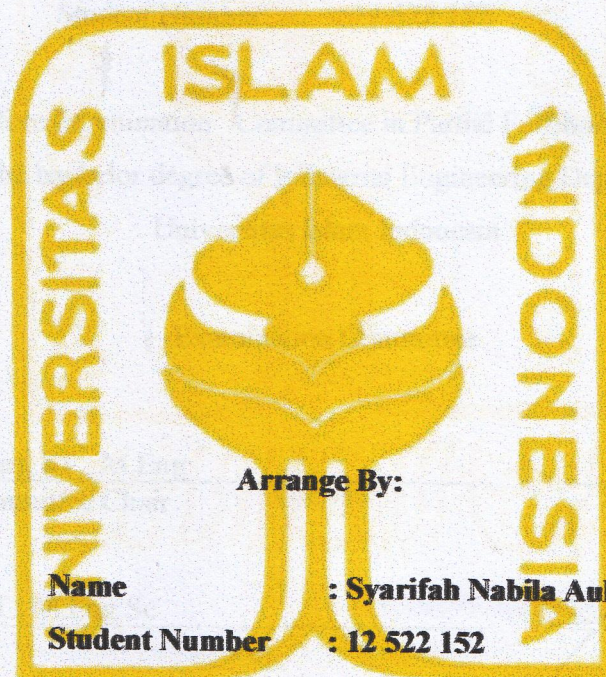
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HEALTH KNOWLEDGE TO INCREASE WORK SAFETY IN PT.
GANDING TOOLSINDO****THESIS**

Yogyakarta, February 26th 2018

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KNOWLEDGE TO INCREASE WORK SAFETY IN PT. GANDING**

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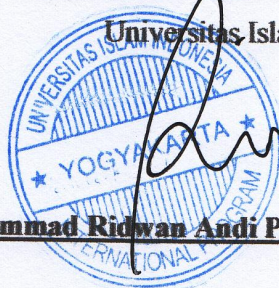
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DEDICATION PAGE

This thesis are dedicated for my mom, Iriyani, SE., my second teacher Dr. AM Kusnadi, SE., M.Si., Diana Rachman, BA., my supporter Ika Resmika Andelina, and all of my friends from IP 2012.

MOTTO

بِسْمِ اللَّهِ الرَّحْمَنِ الرَّحِيمِ

In the name of Allah, the Most Beneficent, the Most Merciful

“Indeed, with hardship [will be] ease. So when you have finished [your duties], then stand up [for worship]. And to your Lord direct [your] longing.”

(QS. Ash-Sharh: 6-8)

Berusahalah untuk lulus, karena kamu telah memilih untuk kuliah.

(Kampus Holic, 2016)

PREFACE

Assalamu'alaikum Wr.Wb.

*Alhamdulillah*irobbilalamin and gratitude are presented to Allah the Highest, while blessings and greetings *mahabbah* are also delegated to the Prophet Muhammad. Therefore, the author can complete this undergraduate thesis. The Author would like to say thanks to:

1. My one and only mom, Iriyani, SE who always give spiritual support and proud to her children.
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7. All of my friends from Industrial Engineering IP class of 2012.

The author realizes this report is not perfect. Thus, suggestions and critics are fully expected.

Wassalamu'alaikum Wr. Wb.

Yogyakarta, February 2018

Syarifah Nabila Aulia Ranti

ABSTRACT

Occupational, Safety and Health knowledge is very important to increase worker awareness toward work safety. Dinas Tenaga Kerja Kota Samarinda stated, 40% case of work accidents in 2014 happened because of unwary workers. This study presents identification the influence of Occupational, Safety and Health knowledge to increasing work safety. Chi-Square method is used to search the influence based on questionnaire data. Twelve indicators are used to discover the problem. Occupational Safety and Health knowledge and work accident prevention significance score is $0.039 < 0.05$. Human Resource Management and work accident score is $0.031 < 0.05$. Occupational Safety and Health knowledge and Human Resource Management score is $0.000 < 0.05$. Age and Occupational Safety and Health knowledge score is $0.014 < 0.05$. Ages and work accident prevention score is $0.000 < 0.05$. Age and Human Resource Management score is $0.002 < 0.05$. Prior education and OSH knowledge score is $0.001 < 0.05$. Prior education and work accident prevention score is $0.023 < 0.05$. Prior education and Human Resources Management score is $0.000 < 0.05$. Work period and OSH Knowledge score is $0.004 < 0.05$. Work period and work accident prevention score is $0.007 < 0.05$. Work period and Human Resource Management score is $0.006 < 0.05$. The significance score from Chi-Square is < 0.05 , this means there is an influence of worker's OSH knowledge to increasing work safety. PT. Ganding Toolsindo already have a good OSH knowledge, high prevention of work accident and good human resources management.

Keywords: Occupational, Safety and Health, Knowledge, Chi-Square

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CHAPTER I

INTRODUCTION

1.1. Background

Occupational health and safety in work environment is a serious issue that attracts the attention of both the government and the public. Employers are faced with more stringent laws to create safe work environment for their employees (Norine et al., 2016). In framework of industrial development in a country, big problems that always arise are work accidents, occupational diseases and negative impacts of the industry environment. Of course, these negative consequences become the responsibility of the people around the industry and the government in general (Bennet, 1995).

Work safety aims to protect the workforce of its right to safety in the conduct of welfare work and to increase national production and productivity, to ensure the safety of everyone else at work, the source of production maintained and used safely and efficiently. Employee safety protection manifests optimal productivity. *Undang-Undang No.1 tahun 1970 about Keselamatan dan Pencegahan Kecelakaan* explained that company shall protect their workers' safety by explaining to the worker about conditions and hazards of the workplace, personal protective equipment for labor which are required in the workplace, as well as safe ways and attitudes in carrying out the work. (Suma'mur, 1989).

The number of work accidents in Indonesia is still quite high despite the decline. In 2016, there have been 105,182 cases of work accident or decreased by 4.6 percent compared to 2015 by 110,285 cases (*Kementerian Ketenagakerjaan Republik Indonesia*, 2017). *Badan Penyelenggara Jaminan Sosial (BPJS)* estimates that every day six workers passed away at work. On average, every year there are 98,000-100,000 cases of occupational accidents and 2400 cases of which result in death. In Indonesia, there are cases of accidents that every day experienced by the workers (LION Indonesia, 2016).

Kementerian Ketenagakerjaan (2015) stated from 100,000 workers who have been in an accident, 31.9% of them are in the construction sector. BPS 2016 statistics, the number of permanent workers in the construction sector are 980,650 people while the largest number was from casual daily labor are 1,470,939,665. The employment sector which also contributed the highest rate of work accidents are manufacturing sector with 31.6%. Then the transportation sector accidents are 9.1%.

Occupational health and safety (OSH) knowledge is important. Notoatmodjo (2003) stated that knowledge is the result of human sensing, or the result of knowing a person to the object through his or her senses (eyes, nose, ears, etc.). The risk factor is connected to knowledge, and circumstances are predictable only if we know them and when, at the same time, we perceive their negative potential. A safety assessment can be based only on objective knowledge, but it could be more effective when using procedures to avoid underestimation of risk causing an inadvertent exposure or an overestimation of risk that would cause panic and inability to make decisions. The use of scales of knowledge can be formulated through different methodologies: here it was decided to use the Likert scale. For the purposes of this survey, three main areas were identified to be explored through the following checklist: Occupational Safety and Health knowledge, work accident prevention, and Human Resources Management (Cecchini, et al., 2017).

Dinas Tenaga Kerja Kota Samarinda stated that case of work accidents in 2014 decreased by 60%. The other 40% work accident happened because of unwary workers. Knowledge that is followed by the application of attitudes plays an important role in reducing the rate of occupational accidents. The introduction of work and its potential hazards is not enough for work safety. Because the recognition is still passive and not followed by the process of learning in practice. Therefore, safety endeavors should start from the level of training to the workforce given so that the implementation of OSH is actually applied at work (Budiono et al, 2003).

PT. Ganding Toolsindo is established since 1998. This company produces small and medium dies, jigs, parts, and checking fixture. They have 40 machines consisting of 24 stamping machines, 8 welding machines, and 8 machining machines. According to 2014 data, PT. Ganding Toolsindo has 80 workers. Company has already established

Panitia Pembina Keselamatan dan Kesehatan Kerja (P2K3) since 2014. The supervisor of P2K3 are also supervisor of HRD/GA in PT. Ganding Toolsindo.

PT. Ganding Toolsindo has several work accident cases. In 2016, there are six cases of work accident. Most of them get injury because of material falling caused hurt their hands and foot. In 2017 despite of the decrease, there are still two cases of work accidents. One of victim's fingers had to be amputated because of the negligence of putting parts on one of the machine buttons that causes work accident. Problem at PT. Ganding Toolsindo is worker unawareness of potential hazard which cause work accident. Most of the workers are less careful when doing their work. They still do not understand about the physical hazard while working and operating the machine. Then, there are several workers who did not used PPE while working, like helmet or safety gloves. Whereas it is important to wear PPE to minimize the effects of occupational accidents, such as falling objects.

There are several hierarchy risk controls for identifying and controlling safety hazard purposed in PT. Ganding Toolsindo. They maintain cleanliness in the corporate environment such as cleaning the HRD room and provide a slippery floor warning sign on the floor while it is still wet to eliminate the potential danger of slipping. Since 2014, P2K3 have arranged work planning to train their workers in OSH and PPE aspects. How to use Personal Protective Equipment (PPE) based on worker's position. Company has placed the picture about how to use PPE in every places of all position.

The research is conducted to identify the influence of OSH knowledge to increase work safety, because there are still several workers are unwary about the physical hazard while working and operating the machine. Most of the work accident cases are caused by unwary workers that may not understand about OSH. After the identification, it is expected to reveal the worker's knowledge about OSH to discover the next step to decrease the unwary workers. This is important for the company to understand their worker's OSH knowledge and can take an action to improve them. If worker's OSH knowledge is good, then it can increase work safety and decrease work accident.

1.2. Problem Formulation

The problem formulation in this study is, “How is the influence of OSH knowledge towards workers to increase work safety in PT. Ganding Toolsindo?”

1.3. Limitation of Research

Limitation in this study is determined in order to make the research in the scope of research topics. The boundaries of that problem are:

1. This research is focused in PT. Ganding Toolsindo, Bekasi.
2. The respondents are employees in PT. Ganding Toolsindo
3. This research only focused in awareness of OSH knowledge, work accident's rate and Human Resource Management.

1.4. Objective of Research

The objective of this study is to identify the influence awareness of OSH knowledge toward worker to increase work safety.

1.5. Benefit of Research

There are some benefits that will be expected from this research. The benefits of this research are:

1.5.1. For Researcher

Employee's knowledge level about Occupational Safety and Health (OSH) and influence to increase work safety will be discovered.

1.5.1. For Company

Company could identify their employee's Occupational Safety and Health (OSH) knowledge level to design work accident prevention.

1.5.2. For Industrial Engineering Department

This research can be a reference to compose future research about OSH knowledge and how to minimize the work accident in company.

1.6. Systematical Writing

Systematical writing is written in order to make this research more structured. Therefore, systematically writing of this research is:

CHAPTER I INTRODUCTION

Chapter I contains the background of research, problem formulation, limitation of research, objective of research, benefit of research and systematical writing.

CHAPTER II LITERATURE REVIEW

Chapter II will explain literature studies. Literature review will elaborate about the inductive and deductive study. Inductive study contains the previous research. Deductive study suggests the basic supporting theories.

CHAPTER III RESEARCH METHODOLOGY

Chapter III elaborated the steps for conducting the research. Research methodology explains the detailed object and focuses on research also the conceptual model of the research.

CHAPTER IV DATA COLLECTING AND PROCESSING

Chapter IV will show the data collection and processing, analysis and results, including supporting images and graphics. The results become the reference of the discussion for this chapter, also conclusion and suggestion in Chapter V.

CHAPTER V DISCUSSION

Chapter V explains the results of data collecting and processing. In this part, there will be core discussion in order to get comprehensive understanding about the whole research.

CHAPTER VI CONCLUSION AND SUGGESTION

Chapter VI contains the conclusion as the answer of the problem formulation that has been established and promoted suggestion for the future research.

BIBLIOGRAPHY**APPENDICES**

CHAPTER II

LITERATURE REVIEW

2.1. Empirical Study

Based on previous study, there are several researches about influence of OSH knowledge to worker safety. Analysis for several studies applies univariate and bivariate analysis.

Floyde, et al. (2013) reviewed the current challenges associated with occupational safety and health (OSH) in small to medium-sized enterprises (SMEs). Literature review is used during research. SMEs need to manage their knowledge capital to capture and retain tacit knowledge. Employees need to collaborate and interact in order to make this tacit knowledge explicit and to enhance this knowledge through learning in the context of the shop floor. Workers and managers need to share what they know and put into practice key aspects of occupational health and safety in the workplace.

Umeokafor et al. (2014) examined the enforcement of occupational safety and health (OSH) regulations. This research validated the state of enforcement of OSH regulations by extracting the salient issues that influence enforcement of OSH regulations in Nigeria. The method of this research is conceptual analysis and review literatures. The conclusion of this research is that the burden of OSH improvement is on the government, educational authorities, organisations, and trade unions.

Njeru (2014) evaluated the factors that influence implementation of Occupational Safety and Health Management Systems (OSHMS). The method of study was a case study descriptive survey research design. The result showed that the factors affecting implementation of OSHMS included; lack of initial review of hazards (10%), inefficient development of systems (25%), failure to formulate OSH objectives (30%) and inadequate hazard prevention mechanism (30%). The study recommended that an OSH policy be developed and implemented, participation of workers be encouraged,

collaborative and support from the government be promoted and a system for continual improvement be designed.

Kamar, et al. (2014) determined the level of awareness of contractors on OSH management systems. Random sampling is used during the research. The findings indicate that most of the Class A Contractors in Kelantan aware that the occupational safety and health management system are important and should be practiced to achieve zero accident and death on site.

Wambilianga & Waiganjo (2014) determined factors influencing compliance with the occupational safety and health legislation in public hospitals in Kenya: using Thika Level 5 Hospital as a case study. Random sampling is used during research. Further research recommended that Thika Level 5 Hospital ought to have a hazard reporting mechanism and training programs in response to emergency situations when need arises. This study also recommended that it was important to handle these areas as they have a great impact on outcomes of compliance with safety and health in public hospitals in Kenya and in particular Thika Level 5 Hospital.

Muthuviknesh & Anil Kumar (2014) analyzed the effect of OHS management on work environment and health. Random sampling is used as method to this research by taking 100 samples in Nelcast Limited (NCL), Chennai. The result of this study shows that majority of the employees perceive the present efforts taken on safety measures and work environment is satisfactory yet there are some factors which need to be concentrated by the company which is suggested by the researcher to ensure hundred percentage safety and congenial work environment which in turn in improve the efficiency and confidence of the employees.

Legg, et al. (2014) presented a conceptual model for increasing acceptable working environments for SMEs. This research used literature review from previous research. From this research, it is argued that modern OHS legislation and interventions to help improve work environments need to increasingly take account of the specific characteristics of SMEs.

Tay (2014) highlighted some of the causes and costs for not maintaining good occupational safety and health (OSH) practices and suggests some preventive measures to overcome the challenges. The method for this research is literature review. The conclusion are self-awareness and the discipline that comes from within the employees themselves would have a stronger impact in minimizing OSH problems like accidents at the workplace.

Gaceri (2015) evaluated the factors affecting the implementation of health and safety measures in supermarket in Kenya; A survey of supermarkets in Kenya. The method of this research is descriptive research design. The study found out that leadership influences the implementation of health and safety measures. The conclusion are leadership and training influences the implementation of health and safety measures, and employee participation was shown by the study to influences the implementation of health and safety measures in supermarkets to a large extent.

Badri (2015) put perspective the complexity of the challenge of integrating OHS into industrial project risk management. The methodology for this research was literature review. The conclusion, the article proposed conceptual and methodological approaches designed to orient future research focused on integrating OHS into industrial project risk management.

Okoye, et al. (2016) were examined the health and safety knowledge and compliance of building construction workers on site in Anambra State, Nigeria. This research applied questionnaire as their method to collect the data. The result was strong positive correlation though not significant between health and safety knowledge and project performance; and between health and safety compliance and project performance.

Bonafede, et al. (2016) were investigated the employer's perception and awareness about Occupational Health and Safety (OHS) implementation. The Sampling method is used to this research. Employers of microenterprises are less persuaded of the usefulness of occupational risk assessment and management activities. The conclusion was these findings may drive policy implementation at national level in order to improve

OSH in SMEs, taking into account their structural, economic and productive characteristics.

Tchiehe & Francois (2016) analyzed the risk to establish the level of risk of a given situation and to determine if the risk is acceptable, tolerable or unacceptable. The method is literature review from previous researches. The risk acceptability influential factors in the domain of OHS are indexed, and a typology of these factors is suggested. In total, 8 parameters regrouping 19 criteria and 14 variables that influence the risk acceptability process are presented, and their scope in OHS is discussed.

Sønderstrup-Andersen & Elsa (2016) unraveled whether the onset of a general economic recession has had an impact on companies' and public institutions preventive occupational health and safety activities. Survey method are using during the research. This research concluded that there is a need for a special focus on the management of preventive workplace health and safety activities in enterprises during a period of economic recession.

Norine et al. (2016) evaluated the role played by occupational health standards (OHS) measures in ensuring successful completion of construction projects. The specific objectives were to evaluate the Role of OHS Regulations in ensuring successful completion of construction project, examine the existing OHS risk management mechanisms and their effects on successful project completion, evaluate the impact of OHS knowledge and skills on successful project completion and to assess the role of financial resources for OHS systems on successful project completion. The population of this research is 72 respondents. They are all non-permanent employees for that specific project and project managers at NPD Ltd and employees from the ministry of public service and labor in occupational health department. This research used questionnaire as the methodology for this research. The study results stipulated that occupational health and safety measures in construction projects helps in minimizing risks and in the due course leads to project completion. The research also found out that most employees have no occupational health and safety skills and the research recommend sensitization of employees on OHS.

Tremblay & Adel Badri (2017) identified avenues of research that are likely to yield practical means of meeting the challenge of integrating OHS into SME culture. The method used literature review from previous researches. The conclusion is that the particularities of the SME context have not attracted the attention of any significant number of researchers in the subject area of OHS.

Nordlof, et al. (2017) investigated whether these factors are associated with Occupational Health and Safety Management (OHSM) practices in companies. The random sampling method are using during this research. This study has found that company size, safety culture, and creditworthiness are associated with better, as well as worse, OHSM practices in companies. Supporting previous study that will support this research will be shown in Table 2.1.

Table 2.1 Supporting Previous Study

No	Authors	Year	Study	Methods
1	Floyde, et al.	2013	The design and implementation of knowledge management systems and e-learning for improved occupational health and safety in small to medium sized enterprises	Literature Review
2	Umeokafor, et al.	2014	Enforcement of Occupational Safety and Health Regulations in Nigeria: an Exploration	Extracting the salient issues
3	Njeru	2014	Factors that Influence Implementation of Occupational Safety and Health Management System at Public Universities in Kenya-A Case Study of Egerton University	Study Descriptive Survey Research Design
4	Kamar, et al.	2014	Contractor's Awareness Occupational Safety and Health (OSH) Management Systems in Construction Industry	Random Sampling
5	Wambilianga & Esther Waiganjo	2014	Factors Influencing Compliance with Occupational Safety and Health Regulations in Public Hospitals in Kenya: A Case Study of Thika Level 5 Hospital	Random Sampling
6	Muthuviknesh & Anil Kumar	2014	The Effect of Occupational Health and Safety Management on Work	Random Sampling

No	Authors	Year	Study	Methods
			Environment: A Prospective Study	
7	Legg, et al.	2014	Managing Safety in Small and Medium Enterprises	Literature Review
8	Tay	2014	Maintaining Good Occupational Safety And Health Practices In Organisations: A Review	Literature Review
9	Gaceri	2015	Factors Affecting the Implementation of Health and Safety in Supermarkets in Kenya	Descriptive Research Design
10	Badri	2015	The Challenge of Integrating OHS into Industrial Project Risk Management: Proposal of a Methodological Approach to Guide Future Research (Case of Mining Projects in Quebec, Canada)	Literature Review
11	Okoye, et al.	2016	Building Construction Workers' Health and Safety Knowledge and Compliance on Site	Questionnaire
12	Bonafede, et al.	2016	OHS Management and Employers Perception: Differences by Firm Size in a Large Italian Company Survey	The Sampling Technique
13	Tchiehe & Francois	2016	Classification of Risk Acceptability and Risk Tolerability Factors in Occupational Health and Safety Managing Preventive	Literature Review
14	Sønderstrup-Andersen & Elsa	2016	Occupational Health and Safety Activities in Danish Enterprises During a Period of Financial Crisis	Survey
15	Norine et al.	2016	The Role Of Occupational Health and Safety Measures in Successful Completion of Construction Projects in Rwanda: Evidence from Nyarutarama Property Developers Ltd	Questionnaire
16	Tremblay & Adel Badri	2017	Assessment of Occupational Health and Safety Performance Evaluation Tools: State of The Art And Challenges for Small and Medium-Sized Enterprises	Literature Review
17	Nordlof, et al.	2017	A Cross-Sectional Study of Factors Influencing Occupational Health and Safety Management Practices in Companies	Random Sampling

No	Authors	Year	Study	Methods
18	Ranti, Syarifah	2018	Influence of Worker's OSH Knowledge to Increase Work Safety in PT. Ganding Toolsindo	Chi-Square

Most of the previous studies examines the implementation of OSH in company, or evaluates the factor that affects the application of OSH. They did not make a specific research yet about the OSH worker knowledge. The research for worker's OSH knowledge covers potential hazard and the application of Personal Protective Equipment (PPE). Even though Dinas Tenaga Kerja Samarinda stated that 40% cases of work accidents in 2014 happened because of unwary workers. This proves that the worker's OSH knowledge is important to minimize work accident.

So, this research will be conducted to analysis of influence OSH knowledge towards worker to increase work safety. Most of the works accidents are happened because of several workers who are unwary about the physical hazard while working and operating the machine. The identification is expected to discover about worker's OSH knowledge, so the company can take an action to improve them.

2.2. Theoretical Study

2.2.1. Knowledge

There are several statements from experts about the definition of knowledge. Tafsir (2000), stated that knowledge is the state of know; where human wants to know, then they seek and acquire the knowledge, so knowledge is all that is known. Factors that affect knowledge are the individual experience of objects and information received by individuals, especially about prevention of industry accidents (Ida Bagus, 1992). Notoatmodjo (2003), stated that knowledge is the result of human sensing, or the result of knowing a person to the object through his or her senses (eyes, nose, ears, etc.).

There are six levels of knowledge. The first level is "know", it refers as recall memory after observing something. To measure whether people know something and can use the questions. The second level is comprehension, it means that someone not only

knows and mentions the object but they must be able to interpret it correctly. Next is application, it means that if someone already known the object, they can use and applicate it to another situation. The fourth level is analysis, this is one's ability to explain and/or separate, then search relationship between component in the problem or certain object. Next is synthesis, it shows someone's ability to summarize or place object into a logic relationship based from their knowledge component. The last level is evaluation, it related with someone's ability to judge against a particular object (Notoatmodjo, 2003).

Notoatmodjo (2003) stated that there are several factors which can influence knowledge of someone. The factors are education, mass media, economy and social-cultural, environment, and experience.

2.2.2. Occupational Safety and Health (OSH)

Mangkunegara (2002) stated that Occupational Safety and Health (K3) is a thought and effort to guarantee the unity and perfection of the physical and spiritual manpower and especially human in general, also work and culture towards the just and prosperous society. Based on science, OSH is all of science and application to prevent work accident, occupational illness, fire, explosion, and environmental pollution. Based OHSAS 18001:2007, Occupational Safety and Health (OSH) are all conditions and factors that can affect the safety and health of workers and others (contractors, suppliers, visitors and guests) in the workplace.

There are three purposes of OSH application based on Undang-Undang Nomor 1 Tahun 1970 about work safety that are:

1. To protect and guarantee manpower safety and others in workplace.
2. To guarantee every production source can be used safely and efficiently.
3. To increase welfare and national productivity.

Effective workplace health and safety programs can save lives by reducing hazards and their possible consequences. They also have positive effects on both the morale and productivity of workers (Ministry of Health, 2012). Occupational Health and Safety Act (2004) stated, every source or situation with potential danger in injury/disease

will be the damage to the property/factory/property or environment. There are three definitions of hazard. Burton et al. (1978) stated that hazard is physical environment elements which dangerous for human and cause by outside forces by them. Australian Standard (2000), stated hazard as a source of potential danger or situation with potential losses.

According to Kuswana (2015), there are five kinds of hazard such as physical, chemical, biological, ergonomic, and psychological, which are:

1. Physical Hazard

The most general hazard in work environment is physical hazard. The sources of physical hazard are electric, hydrolic, kinetic, and so on. The examples of physical hazards are fast move equipment, extreme temperature, vibration, contact pressure on the body, etc.

2. Chemical Hazard

Chemical hazard is substance that has characteristic and effect, which are dangerous to human safety and health. The sources of chemical hazard are gas, dust, and smoke. The examples of chemical hazard are chemical reaction, chemical production process, flammable substance, etc.

3. Biological Hazard

Biological hazard is organism or substance produced by organism which can cause trouble to health and human safety. The examples of biological hazard are blood, virus, bacteria, fungus, human and animal feces, etc.

4. Ergonomic Hazard

Ergonomic hazard happens when a work, body position and work condition putting a load to the body. The short effect can cause muscle ache, and the long term effect can cause serious injury. The ergonomic hazard example are, inadequate posture, long time work repetition, often raised a load, etc.

5. Psychological Hazard

Psychological hazard can cause mental pressure for the worker or disorder. The example of psychological hazard are bullying at the workplace, fatigue, work shift, etc.

If a hazard cannot be eliminated altogether, there are several other ways to limit worker exposure to the hazard. Some of these ways are more effective than others. When all of these different hazard control methods are put in a chart, going from the most

effective to the least effective way to control the hazard, the chart portrays the “Hierarchy of Risk Control” as illustrated in Figure 2.1 below.

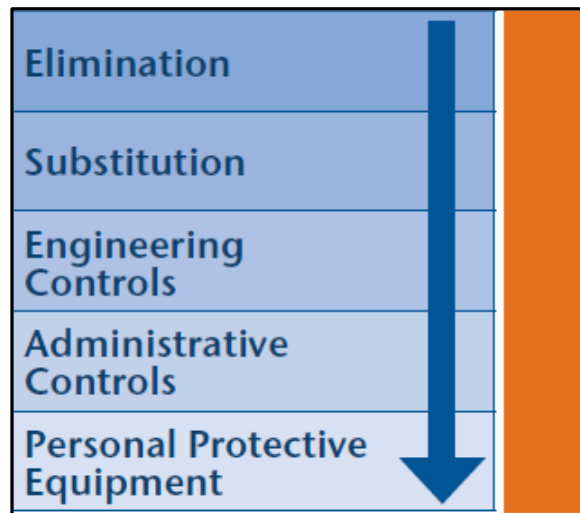


Figure 2.1. Hierarchy risk control
Source: EMC Insurance Companies (2013)

The hierarchy of controls is a model used by safety professionals to illustrate and determine feasible and effective methods for reducing exposure to hazards. There is no single definitive model, but a rather wide range of interpretations of the model with some common terms and order (Coble, 2015). There are a variety of hierarchies of controls, and most are prioritized in the following order:

a. Elimination

Elimination of a hazard is the most effective means of controlling it. Where no hazard or exposure exists, no chance of injury or illness exists. There are many ways to eliminate a hazard from the workplace. For example, consider the hazard of an operator repetitively placing metal parts into a press. Over time, the operator may develop cumulative trauma disorders from repetitive use of the hands and wrists. By automating the press so operators are not required to handle the parts, the hazard of repetition is eliminated. Other examples of hazard elimination are:

1. Redesign a workstation to relieve physical stress and remove ergonomic hazards
2. Install a sound absorbing enclosure around a noisy machine
3. Remove trip hazards in pedestrian walkways

b. Substitution

The next most effective approach is substitution by removing something that produces a hazard and replacing it with a lesser hazard. For example, consider the case of stripping the floor finish from a terrazzo floor so new finish can be applied. The current method uses an extremely corrosive product known to cause chemical burns to exposed skin. In addition, workers are exposed to slip and fall hazards due to the slippery residue produced by the stripping process. The organization should investigate alternative processes, such as a dry removal process that does not use chemicals, thus eliminating the chemical exposure and slip and fall hazards. Other examples of hazard substitution are:

1. Replace a larger parts container (70 lb capacity) with a smaller parts container (20 lb capacity) to reduce the risk of overexertion
2. Substitute a “natural” pesticide for a pesticide that is a known carcinogen

c. Engineering Control

Engineering controls are a very reliable way to control worker exposures as long as the controls are designed, used and maintained properly. Engineering controls do not eliminate hazards, but rather keep people isolated from them. For example, consider the case of a road crew exposed to high levels of dust when cutting concrete. Since there is no way to eliminate or substitute the dust hazard, the road crew uses a wet method to keep airborne dust to a minimum. Other examples of engineering controls are:

1. Ensuring that proper machine guarding is in place on all machinery and equipment
2. Using mechanical aids (lift tables, hoists) to minimize material handling injuries
3. Using ventilation to remove fumes and vapors at their source Providing adjustable workstations to accommodate employees of different heights.

d. Administrative Controls

Administrative controls are management strategies or procedures designed to reduce employee exposure to hazards by changing the way people work. Administrative controls do not actually remove or reduce the hazard and should only be used when elimination, substitution, or engineering controls are infeasible, or until such controls can be implemented. For example, consider our previous case of an operator placing metal parts into a press. If automation is not feasible, the next best option might be to rotate operators every two hours so no single worker is using their hands and wrists constantly throughout

the shift. As you can see, this option does not reduce or eliminate the hazard itself, but might reduce the worker's exposure to the hazard. Other examples of administrative controls include:

1. Training employees on safe job procedures
2. Using team lifts for heavy parts
3. Requiring workers in hot environments to take breaks and providing fluids for rehydration
4. Installing warning signs and labels on equipment
5. Performing maintenance involving hazardous materials at night when minimal staff is present

e. Personal Protective Equipment

Personal Protective Equipment (PPE)

Personal Protective Equipment (PPE), is an equipment which used to minimize serious accident and prevent occupational disease. Encyclopedia of Occupational Health and Safety (2011) stated PPE can include item like gloves, safety eyeglasses and shoes, earplug, respirator, vest, and full body jacket. PPE must be used as an early prevention effort, in every place which have potential hazard to health and work safety (EMC Insurance Companies, 2013).

Indonesia applies PPE refer to *Peraturan Menteri Tenaga Kerja dan Transmigrasi* No. 08/Men/VII/2010. Article 1 contain, Personal Protective Equipment (PPE) is a tool that has the ability to protect a people which can isolates part or all of the body from potential hazards in the workplace.

Then for article 2, there are three clauses in this article. Clause 1 states that company must provide PPE for worker/labor in workplace. Clause 2 states that PPE must be appropriate with Standar Nasional Indonesia (SNI) or applicable standard. Clause 3 states that PPE must be given by company for free.

Article 3 contains two clauses. Clause 1 contains Personal Protective Equipment as referred to in article 2 includes; head protector, eye and face protector, ear protector, respiratory protector, hand protector, and foot protector. Clause 2 contains other than PPE

as referred to clause 1, including PPE like protective clothing, fall protective equipment, and float.

The purpose of using PPE is to decrease injury and disease in industry labor and construction. Then, to decrease direct contact to hazard condition and can decrease high risk. Kuswana (2015) stated there are several PPE in general.

1. Safety Helmet

The function of safety helmet is as a head protector of objects that can be directly affected. A head injury can impair an employee for life or it can be fatal. The figure of safety helmet will be shown in Figure 2.2.



Figure 2.2. Safety helmet
Source: Uvex Group (2018)

2. Safety Belt/Seat Belt

Seat belt/safety belt is property that a device designed to hold a passenger, to remain in place in case of a collision or the vehicle stops unexpectedly. Seat belts are designed to reduce injury, by holding the wearer away from impact with parts of the vehicle or thrown from inside his vehicle. The figure of seat belt will be shown in Figure 2.3.



Figure 2.3. Seat belt
Source: Prolift Industrial Equipment (2017)

3. Boot

Boots are used as a safety device while working in a muddy or muddy place. The figure of boot will be shown in Figure 2.4.



Figure 2.4. Boots
Source: Ansell (2018)

4. Safety Shoes

Safety shoes are made from leather coated metal with thick and strong rubber soles. Safety shoes are used to prevent fatal accident that hit the feet due to sharp or heavy objects, hot objects, chemical fluids, and so forth. The figure of safety shoes will be shown in Figure 2.5.



Figure 2.5. Safety shoes
Source: Uvex Group (2018)

5. Safety Gloves

Safety gloves are used as hand protective devices when working in a place or situation that may result in hand injury. The figure of safety gloves will be shown in Figure 2.6.



Figure 2.6. Safety gloves
Source: Uvex Group (2018)

6. Safety Harness

Safety harness use as a safety equipment while working at height. Worker are required to use this tool while they working at the place more than 1.8 meters height. The figure of safety harness will be shown in Figure 2.7.



Figure 2.7. Safety harness
Source: Preferred Safety Products (2018)

7. Ear Plug/Ear Muff

Ear plug/ear muff is an object which is designed to cover someone's ear as a protector of noise. The figure of ear muff will be shown in Figure 2.8.



Figure 2.8. Ear muff
Source: Uvex Group (2018)

8. Safety Glasses

The function of safety glasses is as eye protector during work like welding process. The figure of safety glasses will be shown in Figure 2.9.



Figure 2.9. Safety glasses
Source: Laser Safety Industries (2018)

9. Respirator

The function of respirator is to protect the user inhale air contaminants. The figure of respirator will be shown in Figure 2.10.



Figure 2.10. Respirator
Source: PK Safety (2017)

10. Face Shield

The function of face shield is to protect face from spark of strange objects while working. The figure of face shield will be shown in Figure 2.11.



Figure 2.11. Face shield
Source: Shasta Safety Supply (2018)

11. Rain Coat

Rain coat are used to protect from water splashes while working. The figure of rain coat will be shown in Figure 2.12.



Figure 2.12. Rain coat
Source: Safety Smart Gear (2018)

2.2.3. Work Accident

An accident is an incident that harms people, damages property or losses to the process (Sugandi, 2003). Poor working conditions potentially cause work accidents, easy pain, stress, difficulty concentrating resulting in decreased productive work. Working conditions include physical variables such as the distribution of working hours,

temperatures, lighting, sounds, and uncomfortable workplace layout, for example: heat, noisy, less air circulation, less clean, resulting in easy stress workers (Supardi, 2007).

Based on several studies, it is explained that many occupational accidents occur due to unsafety behavior (Denny Setiawan, 2009). Sholihin S (2013) stated that safety behavior has a relationship with the perceptions, attitudes and knowledge of employees so that employees can avoid unsafe behavior. NCS research results show that the cause of work accident 88% is the existence of unsafe behavior, 10% because unsafe condition and 2% unknown cause. Another study conducted by DuPont Company showed that 96% work accident caused by unsafe behavior and 4% caused by unsafe condition (Ramadan, 2014).

According to classification guide from ILO and inside Permenaker No.03/MEN/1998 about *Pelaporan dan Penyelidikan Kecelakaan*, there are 11 types of work accident:

a. Struck Against

Worker move and got struck against silent or moving object. Example, when worker got struck against pipes

b. Struct By

Involve something that was moved and hit by moving objects and with their energy hit the victim. For example, the victim got hit by moving forklift.

c. Contact With

Involve agent which are moving to victim direction. The example of agent can be chemical materials or fire.

d. Contact By

The definition of contact by is different from contact with. In this case, the victim move to the dangerous agent.

e. Caught In

Someone or one of part of their body got caught in enclosure.

f. Caught On

Involve victim clothes caught on in moving machine parts. Because of that, victim can got injured from contact on machine.

g. Caught Between

Involve victim part of body got caught between moving objects and silent objects or between moving objects.

h. Fall Same Level

Because of victim foot are tripping from the objects and fall to the same floor.

i. Fall to Below

Victim works in high places and fall to the ground.

j. Overexertion

This can be happen because of victim doing lifting, pulling and pushing activities. They did activities with abnormal position or repetitive works.

k. Exposure

This case can happen because the victims are exposed with work environment condition. The example are temperature, gas, noise, etc (Kuswana, 2015).

2.2.4. Human Resources Management

There are several experts' statements about the definition of Human Resources Management (HRM). Human Resources Management is part of the process that helps the organization achieve its objectives (Cushway, 1994). Then, Dowling, Smart and Huber (1992) stated that Human Resource Management (HRM) is the recognition of the importance of an organization's workforce as vital human resources contributing to the goals of the organization, and the utilisation of several functions and activities to ensure that they are used effectively and fairly for the benefit of the individual, the organization, and society. According to Guest (1987) Human resource management (HRM) comprises a set of policies designed to maximise organizational integration, employee commitment, flexibility and quality of work.

There are five functions of Human Resource Management. Priyono (2010) stated the functions of HRM are:

a. Planning of HRM needs

There are two planning for HRM needs. First planning and human resources demand both short and long term. Second, position analysis in organization to determine the tasks, objectives, skills, knowledge and skills required.

b. Staffing according to organizational needs

There are two process of staffing. First will be the recruitment of the applicant. Then, selecting the qualified applicant.

c. Performance Appraisal

There are two main activities for performance appraisal. First will be the Assessment and evaluation of employee behavior. Next will be the analysis and motivation on the worker behavior.

d. Improving the quality of employees and the work environment

There are three main activity and the outcome which they can achieve, which are improving physical quality and non-physical work environment. First specify, design and implement training programs and human resources development in order to enhance the capabilities and performance of employees. Second, is improving the quality of the working environment, particularly through the quality of working life and productivity improvement programs. Then, improving the physical condition of work in order to maximize the health and safety of workers

e. Achieving the effectiveness of working relationships

There are main activities that apply as standards on how to make effective work relationship. First, recognize and respect for workers' rights. Next, bargain and establish procedures on how to delivered employee complaints. Conduct research on HRM activities.

There are three main purposes of Human Resource Management. According to Schuler (1993) the purposes of HRM are:

- a. To improve productivity levels
- b. To improve quality of work life
- a. To ensure that the organization meets the legal aspects.

2.2.5. Descriptive Statistics

Statistic descriptive is data processing to describe or give an idea about the research object through data sample or population. Processing data from descriptive statistics just have one variable. Statistics descriptive produce table, graphic, and diagram (Wiratna

Sujarweni, 2015). There are two techniques of descriptive analysis according to Hartono (2016).

a. Central Tendency Measurement

Central tendency measurement is a measure used to determine the data set of samples or populations presented in tables or diagrams, which may represent samples or populations. There are several kinds of measures of central tendency, such as mean, median, mode, quartile, decile, and percentile.

b. Measurement of spread data

Measurement of spread data is a statistical measure used to determine the spread of data extent or the degree of data homogeneity. There are several measurements of spread data, but commonly used is the standard deviation. Various sizes of data distribution are range, deviation mean, standard deviation, and relative variation.

2.2.6. Validation

Validity test is used to identify the worthiness from the question to define a variable. Validity test should be done to every question in validity test. Result of r compare to r table when $df = n-2$ with sig 5%. If $r \text{ table} < r \text{ count}$ then the data are valid (Wiratna Sujarweni, 2015).

2.2.7. Reliability

Reliability is size of stability and respondent consistency when answered the question which are the dimension of variable and arrange in questionnaire. Reliability test can be done together to all of the questions. If $\text{Alpha} > 0.60$ then the data is reliable (Wiratna Sujarweni, 2015). For stated reliability in the instrument, the data need to be processed in SPSS 22. The result of reliability test can be seen in Cronbach's Alpha, value of consistency from each of Cronbach's Alpha are shows in Table 3.2.

Table 2.2. Classification Alpha Cronbach score

Cronbach Alpha	Consistency
$\alpha \geq 0,9$	Very Good
$0,8 \leq \alpha < 0,9$	Good
$0,7 \leq \alpha < 0,8$	Accepted
$0,6 \leq \alpha < 0,6$	Questionable
$0,5 \leq \alpha < 0,6$	Less
$\alpha < 0,5$	Not Acceptable

2.2.8. Chi-Square

Chi square is one of the nonparametric statistical tests or free-distribution tests, the calculation is based on the count or ranking data (Hartono, 2016). Data category which are used to chi square test is qualitative, for example nominal and ordinal. The function of chi square is to find a relationship and not to see how big the relationship. Chi square test result is shown in crosstab table (Wiratna Sujarweni, 2015). Chi square can be calculated with formulation as follows by Equation 3.1.

$$\chi^2 = \sum \frac{(f_0 - f_h)^2}{f_n} \quad \dots (3.1)$$

where:

χ^2 = Chi Square

f_0 = Observation frequency

f_h = Expected Frequency

CHAPTER III

RESEARCH METHODOLOGY

3.1. Research Object

Research object is something which becomes a core of the research problem (Arikunto, 2005). The general object of this study is analysis based from Occupational Safety and Health (OSH) knowledge called independent variable. Then, for dependent variable in this study is OSH implementation. In defining research object, the researcher used saturation sampling method. Saturation sampling is technique to be used for all of population member as a sample (Sugiyono, 2008). Saturation sampling (census method) is used because the population in PT. Ganding Toolsindo consists of 80 people.

3.2. Research Subject

Sugiyono (2008) stated, subject is population target that has certain characteristic that researcher set to study and then drawn conclusion. The subject of this research is employee from Plant 1 PT. Ganding Toolsindo, Cikarang. The research conducted by involving 80 workers of PT. Ganding Toolsindo. There are several criteria of respondent before making the questionnaire:

- a. All of respondents are employees of PT. Ganding Toolsindo
- b. Ages are ranged from 25 until 60 years old
- c. Their prior education minimum from SMA/SMK
- d. Minimum one year working period.

3.3. Collecting Data Method

3.3.1.Type of Data

There are two types of collecting data used in this study, primary data and secondary data. Types and explanation about both of them are presented below:

a. Primary Data

Data which are obtained directly from the research. The data are derived from the result of questionnaire, direct interviews from employees, and observation.

b. Secondary Data

Secondary data is obtained from readings or literature studies that support the research. Examples of secondary data are previous journals about OSH and work accident, books about OSH and SPSS, and information from the internet about OSH current issues.

3.3.2. Research Instruments

Research instrument which are used in this study include:

1. Questionnaire as data collecting method. There are four parts of questionnaires.

i. Demography questionnaire

Demography questionnaire are containing employee's personal data, like their name, job position, age, prior education, and work period.

ii. Occupational Safety and Health (OSH) knowledge questionnaire

There are 14 questions are show in Occupational Safety and Health.

- a. The application of Occupational Safety and Health
- b. Occupational Safety and Health training
- c. Occupational Safety and Health application rule
- d. Occupational Safety and Health Committee
- e. Occupational Safety and Health problem awareness
- f. Occupational Safety and Health daily audit
- g. Availability of Personal Protective Equipment
- h. The convenience of using Personal Protective Equipment
- i. Using Personal Protective Equipment during work hour

- j. Supervision using Personal Protective Equipment
- k. Awareness of using Personal Protective Equipment
- l. Potential hazard in PT. Ganding Toolsindo
- m. Awareness of potential hazard
- n. Standard Operating Procedure to operate the machine
- iii. Work accident prevention questionnaire

There are six questions about work accident prevention.

- a. Work accident cases in PT. Ganding Toolsindo
- b. First aid facility availability
- c. Work accident awareness
- d. Daily check-up to decrease work accident
- e. Disease and injury handling mechanism
- f. Emergency contact
- iv. Human Resources Management (HRM) questionnaire

Three questions are following in Human Resources Management.

- a. Work risk in PT. Ganding Toolsindo.
- b. Health insurances availability
- c. Reward and punishment implementation.
- 2. IBM SPSS Statistic version 22 for processing the data.
- 3. Recorded documentation, using Nikon camera type D5200.

3.3.3. Location

The research conducted in Plant I of PT. Ganding Toolsindo in Cikarang, Bekasi. All of departments in this company are involved. There are production department, engineering department, PPIC, QA, HRD, etc.

3.3.4. Data Collection Method

There are several data collecting methods which are applied in this research, such as:

1. Observation

Observation is the process of observing, understanding the patterns, norms and meaning of the behavior of a particular object.

2. Literature Review

Study theory from previous journal and thesis, books which supporting literature review and data collecting method, and other supporting literature like article from internet.

3. Questionnaire

Questionnaire is a method of collecting data obtained by answering and filling out a list of questions posed by the author to the respondent. The total respondents are 80 people. All of them are employees in PT. Ganding Toolsindo. There are four parts to construct the questionnaire.

a. Demography questionnaire

The contents of demography questionnaire are instruction and respondent personal data include their position, ages, prior education, and work period.

b. Occupational Safety and Health (OSH) questionnaire

OSH questionnaire has 14 questions. Question 1-6 are about OSH knowledge. Question 7-11 consist of personal protective equipment (PPE). Question 12-13 are about potential hazard. Question 14 are about Standard Operating Procedure (SOP) maintenance.

c. Work accident prevention questionnaire

Work accident prevention has six questions. Question 1 considers work accident case. Question 2 asks about first aid availability. Question 3-6 are about how to handle work injury.

d. Human Resources Management (HRM) questionnaire

Human Resources Management consists of three questions. Question 1 is about work risk. Question 2 is about health insurance (BPJS) facility. Question 3 is about reward and punishment.

For three indicators in questionnaire, each question will be measured by using Likert scale to measure respondents' attitudes, opinions, and perceptions of something, eg agree - disagree, happy - not happy, and good - not good. In this study respondents' answers were scored according to Likert scale as follows in Table 3.1 below.

Table 3.1. Likert Scale Score.

Scale	Score
Strongly agreed	5
Agreed answer	4
Probably disagree	3
Disagree	2
Strongly disagree	1

3.4. Data Processing and Analysis

3.4.1. Descriptive Statistic

There are several data for descriptive statistics, employee personal data and question from three indicators. Each of the questionnaire have several parameters, there are:

a. Ages

There are four parameters of age category, such as 25-35 years old, 36-45 years old, 46-55 years old, and more than 55 years old.

b. Prior education

There are two parameters of prior education, such as SMA/SMK and Bachelor Degree (S1).

c. Work period

There are four parameters of work period, such as 1-5 years, 6-10 years, 11-15 years, and more than 15 years.

d. OSH knowledge

There are three parameters of OSH knowledge, such as good enough, good, and very good.

e. Work accident prevention

There are three parameters of work accident prevention, such as medium, high and very high.

f. Human resources management

There are three parameters of human resources management, such as good enough, good, and very good.

3.4.2.Validation Data

Validity test are used to know the worthiness from the question to define a variable. Sugiyono (2010) stated that validity from an instrument means that instrument can be used for what should be measured.

a. Determine value of r table

With significance value 5% and degree of freedom (df) = $n - 2$, then value of r table can be seen in r table. For this study, the r table is 0,22.

b. Search count of r table

To determine value of r table count, SPSS 22 in Cronbach's Alpha If Item Deleted.

c. r table and r count comparison

If r count positive and r count $\geq r$ table then H_0 is accepted

If r count positive and r count $< r$ table then H_0 is rejected

If r count negative and r count $\leq r$ table, then H_0 is rejected

3.4.3.Reliability

Reliability is size of stability and respondent consistency when answered the question which are the dimension of variable and arrange in questionnaire (Wiratna Sujarweni, 2015). There are three indicators which are test in reliability test.

1. Reliability test of OSH knowledge

There are 14 questions which are tested on reliability test. According to Alpha Cronbach's table, if the score is ≥ 0.7 then the data is reliable.

2. Reliability test of work accident prevention

There are six questions which are tested on reliability test. If the Alpha Cronbach's score is ≥ 0.7 then the data is reliable.

3. Reliability test of Human Resources Management

There are three questions of HRM which are tested in reliability test. Based on Alpha Cronbach's table, if the score is ≥ 0.7 then the data is reliable.

3.4.4. Chi-Square Analysis

Chi square is one of the nonparametric statistical tests or free-distribution tests, the calculation is based on the count or ranking data (Hartono, 2016). Data category which are used to chi square test is qualitative, for example nominal and ordinal. The function of chi square is to find a relationship and not to see how big the relationship. Chi square test results are shown in crosstab table (Wiratna Sujarweni, 2015).

There are twelve comparisons are processed in chi square method. There are comparisons between indicators, like OSH knowledge, work accident prevention, and human resources management. Then, it is compared between the indicators and employee's profile like ages, work period, and prior education. Based on the comparison, the value of chi-square is withdrawn whether the comparison has any influence, and in where the comparison has the biggest influence.

- a. Comparison between OSH knowledge and work accident prevention
- b. Comparison between human resources management and work accident prevention
- c. Comparison between OSH knowledge and human resources management
- d. Comparison between ages and OSH knowledge
- e. Comparison between ages and work accident prevention
- f. Comparison between ages and human resources management
- g. Comparison between work period and OSH knowledge
- h. Comparison between work period and work accident prevention
- i. Comparison between work period and human resources management
- j. Comparison between prior education and OSH knowledge
- k. Comparison between prior education and work accident prevention
- l. Comparison between prior education and human resources management

After comparing the variable, the hypothesis for this research will be discovered. Hypothesis will answer problem formulation about influence of OSH knowledge towards worker to increase work safety. The hypothesis consists of H_0 and H_1 .

H_0 : If p value $< 0,05$ H_0 is accepted, which mean there is an influence of worker's OSH knowledge to increasing work safety in minimizing work accident.

H_1 : If p value $> 0,05$ H_0 is rejected, which mean there isn't any influence of worker's OSH knowledge to increasing work safety in minimizing work accident.

3.5. Research Flowchart

Flowchart of research in this study shown in Figure 3.1 as follows:

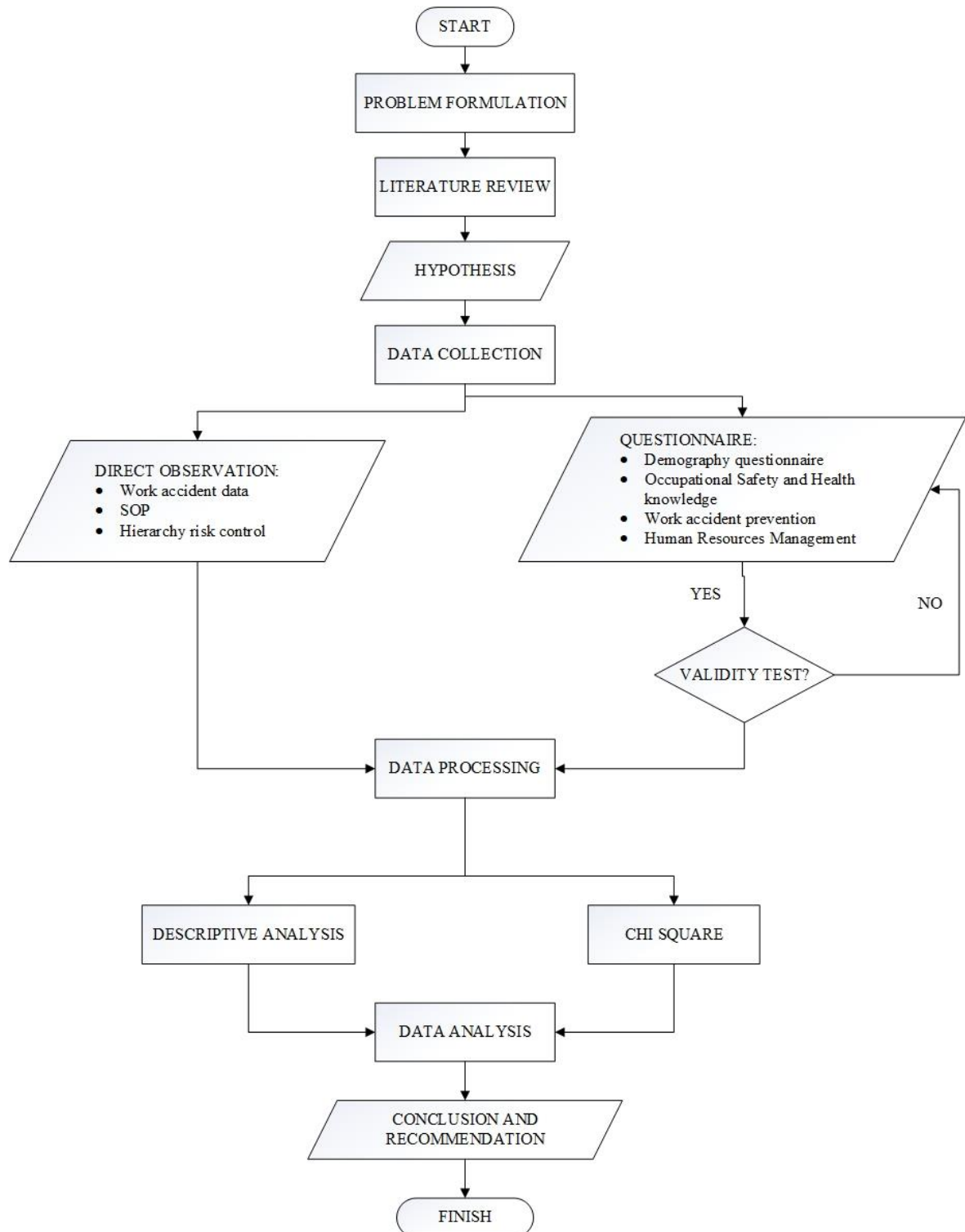


Figure 3.1 Research Flowchart

Based on the research flowchart in Figure 3.1, there are several steps to be conducted in the research.

1. Determine problem formulation based on background of the study. Problem formulation is the question that appeared based on topic and background of the study.
2. Make literature review, there are empirical and theoretical study. Empirical study is previous study that made as basis of the study. Theoretical study is explanation, which is related to the study.
3. Determine the hypothesis based on problem and theory.
4. Collect data to get the result of the problem. There are two separate methods to collect the data, which are direct observation and questionnaire.
5. Direct observation by taking several pictures regarding to recent condition of the company.
6. Make a questionnaire after determining the important indicator. Questionnaire can be spread to all of the respondents after carrying out validity test.
7. Validity test is designated to identify whether all of the questionnaires are valid or not. The questionnaire can be used if all of questions are valid.
8. Data can be processed after questionnaire and photo from direct observation are already collected. Questionnaire can be calculated manually and then processed in SPSS.
9. After the calculation data from questionnaire were finished, the respondent profile will be discovered such as respondent's age, last formal education, length of work. Then the result of data distribution in each indicator.
10. Compare all indicators to discover whether the comparisons are influencing each other or not. Then, compare the value of symmetric measures to know which indicators have more influence to the others. The result must be same with previous hypothesis.
11. The chi square and direct observation result can be analyzed and discussed. The cause why one comparison has stronger influence than the other will be discovered.
12. Conclusion and recommendation can be made based on the analysis and discussion. Conclusion must answer problem formulation. Then recommendation will be made based on the discussion.

CHAPTER IV

DATA COLLECTING AND PROCESSING

4.1. Data Collection

The data collection on this research is described as respondent's profile and the result of questionnaire.

4.1.1. Respondent Profile

Respondent's profile is divided into age and work period.

a. Respondent Age

There are four classifications from age of the respondent. The respondent's age profile is described in Table 4.1 and histogram in Figure 4.1 below.

Table 4.1. Age of respondent			
		Frequency	Percent
Valid	25 - 35	36	45.00
	36 - 45	39	48.75
	46 - 55	3	3.75
	> 55	2	2.50
Total		80	100.00

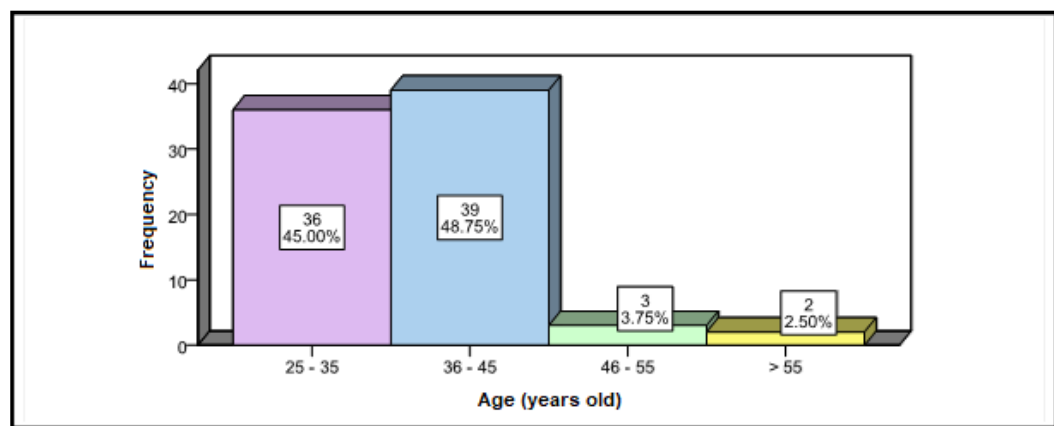


Figure 4.1. Age of respondent

There are 48.75% of worker in 36-45 years old. Then 25-35 years old with 45%, 46-55 years old with 3.75%, and more than 55 years old with 2.5%.

b. Respondent's Prior education

There are two classifications from age of the respondent. The respondent's prior education profile is described in Table 4.2 and histogram in Figure 4.2 below.

Table 4.2. Respondent's prior education

		Frequency	Percent
Valid	SMA/ SMK	41	51.25
	S1	39	48.75
	Total	80	100.00

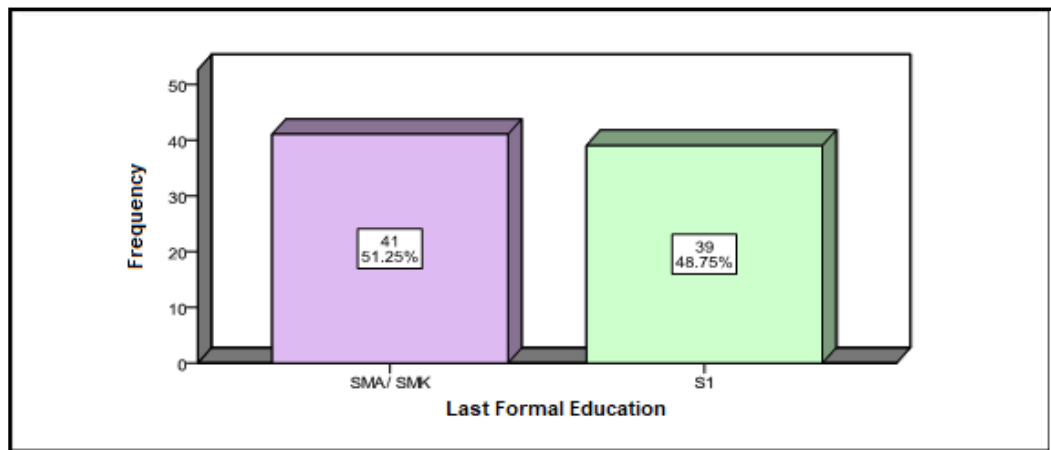


Figure 4.2. Respondent's prior education

The most workers' prior education is SMA/SMK with 51.25%. The other 48.75% are bachelor.

c. Work period

There are four classifications of respondent's work period. The respondent's work period profile is described in Table 4.3 and histogram in Figure 4.3.

Table 4.3. Respondent's work period

		Frequency	Percent
Valid	1 – 5	33	41.25
	6 – 10	28	35.00
	11 – 15	16	20.00
	> 15	3	3.75
	Total	80	100.00

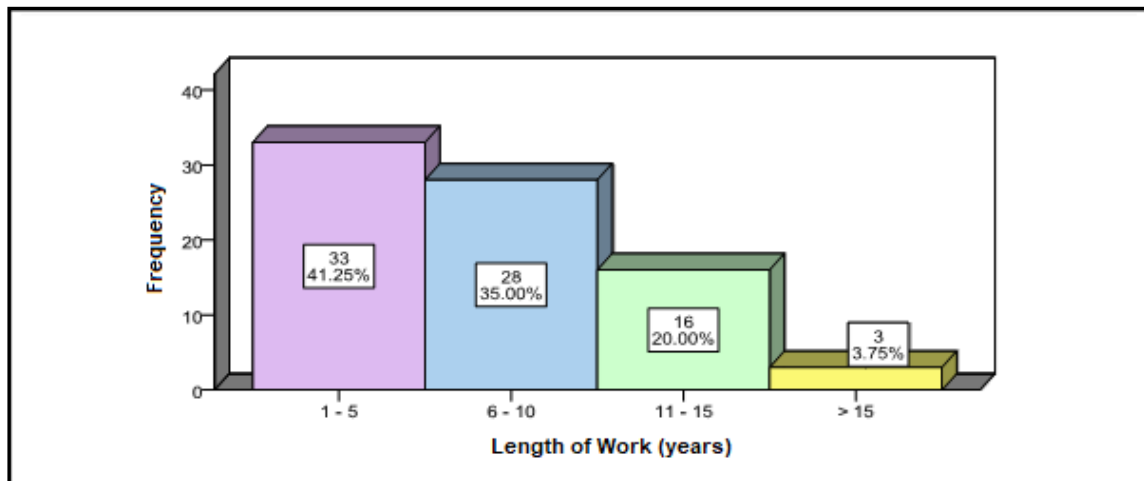


Figure 4.3 Respondent's work period

The longest worker's work period is more than 15 years with 3.75%. Followed by 11-15 years with 20%, 6-10 with 35%, and 1-5 years with 41.25%.

4.1.2. Result of Questionnaire

There are three indicators from the questionnaire which are used to identify the result of research. There are Occupational Safety and Health knowledge, work accident prevention, and human resources management. After identifying the result of all three indicators, descriptive statistics data will be discovered.

a. Occupational Safety and Health Knowledge

There are three category results from OSH knowledge. It started from the lowest to the highest result, which are good enough, good, and very good. The results are shown in Table 4.4 and histogram on Figure 4.4.

Table 4.4. Result of OSH knowledge

Occupational Safety and Health Knowledge			
		Frequency	Percent
Valid	Good Enough (> 36.40 - 47.60)	1	1.25
	Good (> 47.60 - 58.80)	62	77.50
	Very Good (> 58.80 - 70)	17	21.25
	Total	80	100.00

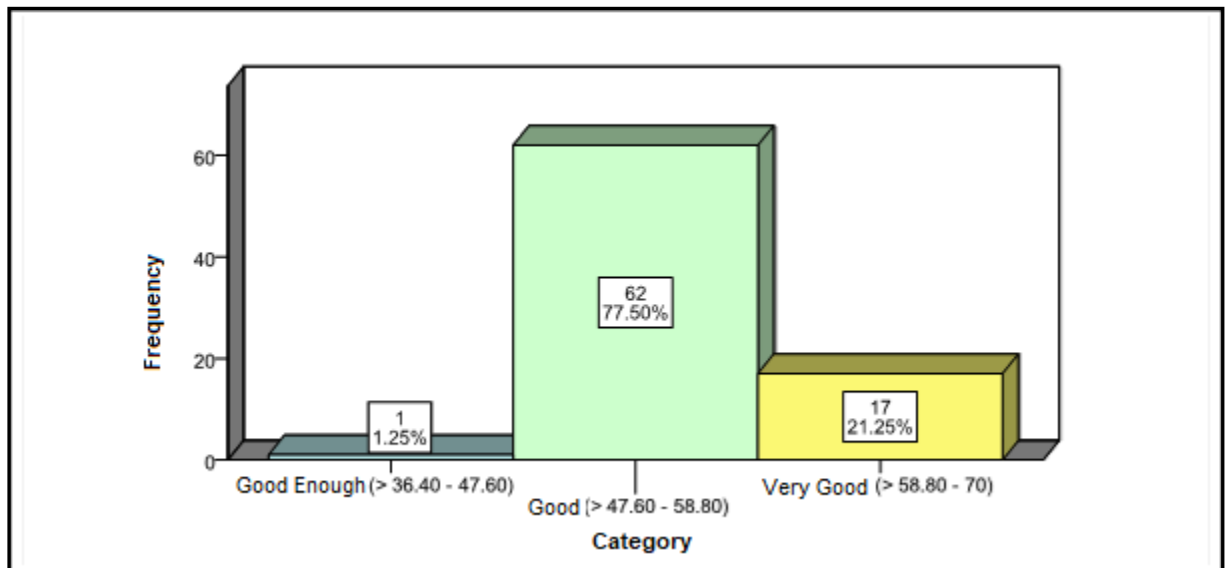


Figure 4.4. Result of OSH knowledge

The worker's OSH knowledge is classified as good (>47.60-58.80) with 77.50%. Then followed by very good (>58.80-70) with 21.25% and good enough (36.40-47.60) with 1.25%.

b. Work Accident Prevention

There are three category results from OSH knowledge. It started from the lowest to the highest, which are medium, high, and very high. The results are shown in Table 4.5 and histogram Figure 4.5.

Table 4.5. Result of work accident prevention

Work Accident Prevention			
		Frequency	Percent
Valid	Medium (> 15.60 - 20.40)	9	11.25
	High (> 20.40 - 25.20)	69	86.25
	Very High (> 25.20 - 30)	2	2.50
	Total	80	100.00

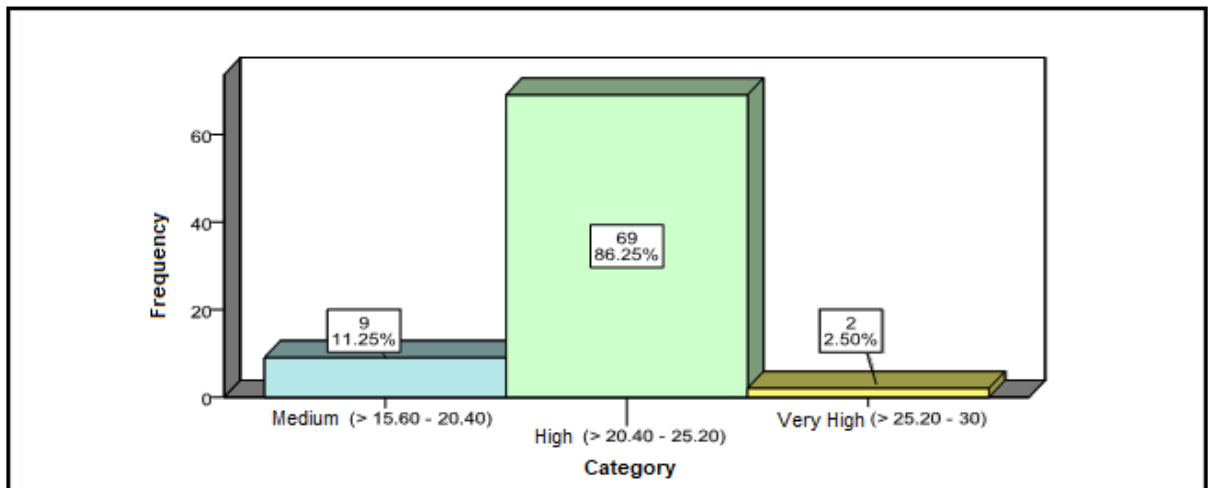


Figure 4.5 Result of work accident prevention

The work accident prevention is high (>20.40-25.20) with 86.25%. Then followed by medium (>15.60-20.40) with 11.25% and very high (>25.20-30) with 2.50%.

c. Human Resource Management

There are three categories of result on human resource management. It started from the lowest to the highest, there are good enough, good, and very good. The results are shown in Table 4.6 and histogram in Figure 4.6.

Table 4.6. Result of human resources management

Human Resource Management			
		Frequency	Percent
Valid	Good Enough (> 7.80 - 10.20)	16	20.00
	Good (> 10.20 - 12.60)	42	52.50
	Very Good (> 12.60 - 15)	22	27.50
	Total	80	100.00

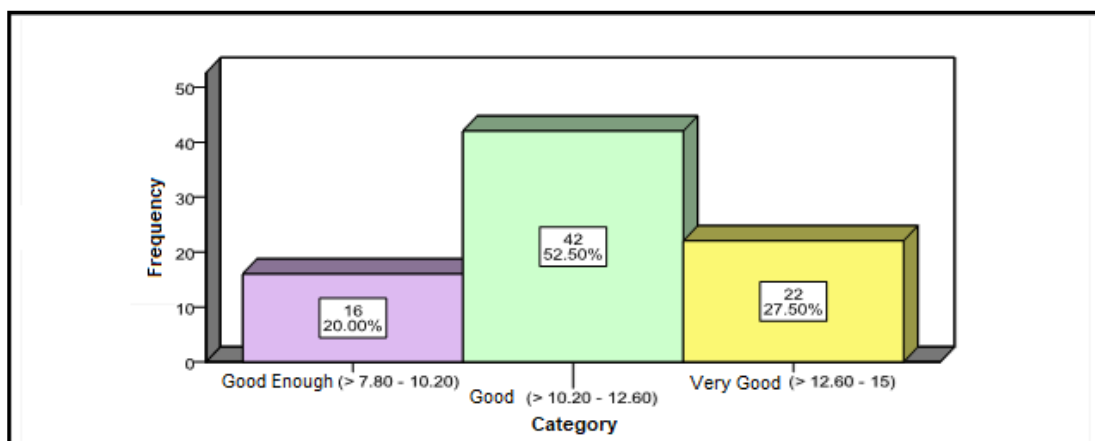


Figure 4.6 Result of human resource management

Human resource management are good (>10.20-12.60) with 52.50%. Then followed by very good (>12.60-15) with 27.50% and good enough (>7.80-10.20) with 20%

d. Descriptive Statistics

The descriptive statistics shows the mean result of all three indicators. The results are shown in Table 4.7 below.

Table 4.7. Descriptive statistic				
Statistics				
		Occupational Safety and Health Knowledge	Work Accident Prevention	Human Resource Management
N	Valid	80	80	80
	Missing	0	0	0
Mean		54.963	21.450	11.600
Mean Weight		3.926	3.575	3.867
Median		55	21	11
Mode		56	21	11
Std. Deviation		4.817	1.466	1.165
Minimum		47.000	18.000	10.000
Maximum		67.000	26.000	14.000
Sum		4397	1716	928

The mean of OSH knowledge is 54.963, work accident prevention is 21.450, and human resources is 11.600. The conclusion for OSH knowledge are in good category because the mean score. Then the most workers have high work accident prevention based on mean score. The company has good human resource management based on the mean score.

4.2. Data Processing

4.2.1. Reliability and Validity Test

Reliability and validity tests are the test to identify that all of the questions are valid and can be used to collect the data. There are three indicators which are required to get the reliability and validity test, Occupational Safety and Health (OSH) knowledge, work accident prevention, and human resources management.

a. Occupational Safety and Health (OSH) Knowledge

There are 14 questions in OSH knowledge indicator. The result of reliability and validity for all of questions that are shown in Table 4.8 and 4.9 below.

Table 4.8. Reliability Result of OSH knowledge

Reliability Statistics	
Cronbach's Alpha	N of Items
.893	14

Reliability result is 0.893. If Reliability ≥ 0.7 , it means that the question is reliable.

Based on the result, the questionnaire for OSH knowledge is reliable.

Table 4.9. Validity Result of OSH knowledge

No	Occupational Safety and Health Knowledge	R Count	R Table	Result
1	The application of Occupational Safety and Health	0.375	0.22	Valid
2	Occupational Safety and Health training	0.401	0.22	Valid
3	Occupational Safety and Health application rule	0.378	0.22	Valid
4	Occupational Safety and Health Committee	0.389	0.22	Valid
5	Occupational Safety and Health problem awareness	0.414	0.22	Valid
6	Occupational Safety and Health daily audit	0.504	0.22	Valid
7	Availability of Personal Protective Equipment	0.534	0.22	Valid
8	The convenience of using Personal Protective Equipment	0.881	0.22	Valid
9	Using Personal Protective Equipment during work hour	0.817	0.22	Valid
10	Supervision using Personal Protective Equipment	0.793	0.22	Valid
11	Awareness of using Personal Protective Equipment	0.698	0.22	Valid
12	Potential hazard in PT. Ganding Toolsindo	0.389	0.22	Valid
13	Awareness of potential hazard	0.818	0.22	Valid
14	Standard Operating Procedure to operate the machine	0.648	0.22	Valid

validity scores are more than 0.22. The question is valid if validity score is ≥ 0.22 .

All of questions for OSH knowledge are valid because R table $<$ R count with significance value is 5%.

b. Work Accident Prevention

There are six questions for work accident prevention indicator. The result of Reliability and validity of the question are shown in table 4.10 and 4.11.

Table 4.10. Reliability result of work accident prevention

Reliability Statistics	
Cronbach's Alpha	N of Items
.756	6

Reliability result is 0.756. If Reliability ≥ 0.7 , it can be concluded that the question is reliable. Based on the result, the questionnaire for work accident prevention is reliable.

Table 4.11. Validity result of work accident prevention

No	Work Accident Prevention	R Count	R Table	Result
1	Work accident cases in PT. Ganding Toolsindo	0.680	0.22	Valid
2	First aid facility availability	0.643	0.22	Valid
3	Work accident awareness	0.436	0.22	Valid
4	Daily check-up to decrease work accident	0.449	0.22	Valid
5	Disease and injury handling mechanism	0.400	0.22	Valid
6	Emergency contact	0.583	0.22	Valid

The validity score of work accident prevention is more than 0.6. The question is valid if validity score is ≥ 0.22 . All of questions for work accident prevention are valid because R table < R count with significance value of 5%.

c. Human Resource Management

There are three questions for human resources management indicator. Reliability and validity result are shown in Table 4.12 and 4.13 below.

Table 4.12. Reliability of human resource management

Reliability Statistics	
Cronbach's Alpha	N of Items
.739	3

Reliability result is 0.739. If Reliability ≥ 0.7 the question is reliable. Based on the result, the questionnaire for human resource management is reliable.

Table 4.13. Validity result of human resource management

No	Human Resource Management	R Count	R Table	Result
1	Work risk in PT. Ganding Toolsindo	0.606	0.22	Valid
2	Health insurances availability	0.590	0.22	Valid
3	Reward and punishment implementation	0.514	0.22	Valid

The validity scores are more than 0.5. The question is valid if validity score is ≥ 0.22 . All of question for human resource management are valid because $R \text{ table} < R \text{ count}$ with significance value is 5%.

4.2.2. Chi Square

Chi square is one of the nonparametric statistical tests or free-distribution tests, the calculation is based on the count or ranking data (Hartono, 2016). There are twelve comparisons in this method. There is comparison between the three variables such as OSH knowledge, work accident prevention, and human resource management. Then comparisons between the three variables such as age, work period, and prior education are compared. After comparing all of them, there will be a conclusion which will answer the problem formulation.

a. Comparison between OSH Knowledge and Work Accident Prevention

There are three results of the comparison between OSH knowledge and work accident prevention. First crosstab analysis, to identify whether there is a correlation or relationship between OSH knowledge and work accident prevention. Then, chi square test, to find significance value, if significance (p) value is < 0.05 then there is positive correlation between OSH knowledge and work accident prevention. The results of these comparisons are shown in Table 4.14, 4.15, and 4.16 below.

Table 4.14. OSH knowledge and work accident prevention crosstab

Occupational Safety and Health Knowledge		Work Accident Prevention			Total
		Medium	High	Very High	
	Count	0	1	0	1
	% within				
Good Enough	Occupational Health and Safety Knowledge	.0%	100.0%	.0%	100.0%
	% of Total	.0%	1.3%	.0%	1.3%
	Count	9	53	0	62
	% within				
Good	Occupational Health and Safety Knowledge	14.5%	85.5%	.0%	100.0%
	% of Total	11.3%	66.3%	.0%	77.5%
	Count	0	15	2	17
	% within				
Very Good	Occupational Health and Safety Knowledge	.0%	88.2%	11.8%	100.0%
	% of Total	.0%	18.8%	2.5%	21.3%
	Count	9	69	2	80
	% within				
Total	Occupational Health and Safety Knowledge	11.3%	86.3%	2.5%	100.0%
	% of Total	11.3%	86.3%	2.5%	100.0%
	Count	9	69	2	80

If OSH knowledge is good enough then the work accident prevention is high with 1.3%. If OSH knowledge is good, then the work accident prevention is high with 66.3%. If OSH knowledge is very good, then the work accident prevention is high with 18.8%.

Table 4.15 OSH knowledge and work accident prevention significance value result

Chi-Square Tests			
	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	10.059 ^a	4	.039
Likelihood Ratio	10.816	4	.029
Linear-by-Linear Association	5.940	1	.015
N of Valid Cases	80		

The significance value is 0.039. If significance < 0.05 then there is correlation between OSH knowledge and work accident prevention.

Table 4.16 OSH knowledge and work accident prevention contingency coefficient

Symmetric Measures			
		Value	Approx. Sig.
Nominal by Nominal	Contingency Coefficient	.334	.039
N of Valid Cases		80	

The value of Pearson contingency coefficient is 0.334. This value is used as the comparison to the other comparison with one same indicator.

b. Comparison between Human Resource Management and Work Accident Prevention
Crosstab analysis is employed to identify whether there is a correlation or relationship between human resources management and work accident prevention. Then, chi square test, to find significance value, if significance (p) value is < 0.05 then there is positive correlation between human resources management and work accident prevention. The result of this comparison is shown in Table 4.17, 4.18, and 4.19 below.

Table 4.17. Human resource management and work accident prevention crosstab

Human Resources Management		Work Accident Prevention			Total High
		Medium	High	Very High	
Good Enough	Count	1	15	0	16
	% within Human Resources Management	6.3%	93.8%	.0%	100.0%
	% of Total	1.3%	18.8%	.0%	20.0%
	Count	8	34	0	42
Good	% within Human Resources Management	19.0%	81.0%	.0%	100.0%
	% of Total	10.0%	42.5%	.0%	52.5%
	Count	0	20	2	22
	% within Human Resources Management	.0%	90.9%	9.1%	100.0%
Very Good	% of Total	.0%	25.0%	2.5%	27.5%
	Count	9	69	2	80
Total	% within Human Resources Management	11.3%	86.3%	2.5%	100.0%
	% of Total	11.3%	86.3%	2.5%	100.0%

If human resources management are good enough then the work accident prevention is high with 18.8%. If human resources management is good, then the work accident prevention is high with 42.5%. If human resources management is very good, then the work accident prevention is high with 25.0%.

Table 4.18 Human resource management and work accident prevention significance value

Chi-Square Tests			
	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	10.670 ^a	4	.031
Likelihood Ratio	12.709	4	.013
Linear-by-Linear Association	2.517	1	.113
N of Valid Cases	80		

The significance value is 0.031. If significance < 0.05 then it can be concluded that there is correlation between human resources management and work accident prevention.

Table 4.19 Human resource management and work accident prevention contingency

Symmetric Measures			
		Value	Approx. Sig.
Nominal by Nominal	Contingency Coefficient	.343	.031
N of Valid Cases		80	

The value of human resource management and work accident prevention Pearson contingency coefficient value is 0.343. This value is used as the comparison to the other comparison with one same indicator.

c. Comparison Between OSH Knowledge and Human Resource Management

There are three results of the comparison between OSH knowledge human resource management. First, crosstab analysis is employed to identify whether there is a correlation or relationship between OSH knowledge and human resource management. Then, chi square test is implemented to find significance value, if significance (p) value is < 0.05 then there is positive correlation between OSH knowledge and human resource

management. The results of this comparison are shown in Table 4.20, 4.21, and 4.22 below.

Table 4.20. OSH knowledge and human resource management crosstab

Occupational Health and Safety Knowledge		Human Resources Management			Total High
		Good Enough	Good	Very Good	
	Count	0	1	0	1
	% within Occupational Health and Safety Knowledge				
Good Enough	% of Total	.0%	100.0%	.0%	100.0%
	Count	16	37	9	62
	% within Occupational Health and Safety Knowledge				
Good	% of Total	25.8%	59.7%	14.5%	100.0%
	Count	0	4	13	17
	% within Occupational Health and Safety Knowledge				
Very Good	% of Total	.0%	23.5%	76.5%	100.0%
	Count	16	42	22	80
	% within Occupational Health and Safety Knowledge				
Total	% of Total	20.0%	52.5%	27.5%	100.0%
	% of Total	20.0%	52.5%	27.5%	100.0%

Based on the result of crosstab table above, if OSH knowledge is good enough then the human resources management is good with 1.3%. If OSH knowledge is good, then the human resources management is good with 46.3%. If OSH knowledge is very good, then the human resources management is very good with 16.3%.

Table 4.21. OSH knowledge and human resource management significance value result

Chi-Square Tests			
	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	27.301 ^a	4	.000
Likelihood Ratio	27.597	4	.000
Linear-by-Linear Association	19.793	1	.000
N of Valid Cases	80		

The significance value is 0.000. If significance < 0.05 then it can be concluded that there is correlation between OSH knowledge and human resources management.

Table 4.22. OSH knowledge and human resource management contingency coefficient

Symmetric Measures			
		Value	Approx. Sig.
Nominal by Nominal	Contingency Coefficient	.504	.000
N of Valid Cases		80	

The value of Pearson contingency coefficient is 0.504. This value is used as the comparison to the other comparison with one same indicator.

d. Comparison between age and OSH knowledge

There are three results of the comparison between age and OSH knowledge. First crosstab analysis is designated to identify whether there is a correlation or relationship between age and OSH knowledge. Chi square test, to find significance value, if significance (p) value are < 0.05 then there is positive correlation between age and OSH knowledge. The results of this comparison are shown in Table 4.23, 4.24, and 4.25 below.

Table 4.23 Comparison between age and OSH knowledge crosstab

Age		Occupational Health and Safety Knowledge			Total High
		Good Enough	Good	Very Good	
25 - 35	Count	1	33	2	36
	% within Ages	2.8%	91.7%	5.6%	100.0%
	% of Total	1.3%	41.3%	2.5%	45.0%
36 - 45	Count	0	27	12	39
	% within Ages	.0%	69.2%	30.8%	100.0%

Age		Occupational Health and Safety Knowledge			Total High
		Good Enough	Good	Very Good	
46 - 55	% of Total	.0%	33.8%	15.0%	48.8%
	Count	0	2	1	3
	% within Ages	.0%	66.7%	33.3%	100.0%
	% of Total	.0%	2.5%	1.3%	3.8%
> 55	Count	0	0	2	2
	% within Ages	.0%	.0%	100.0%	100.0%
	% of Total	.0%	.0%	2.5%	2.5%
	Count	1	62	17	80
Total	% within Ages	1.3%	77.5%	21.3%	100.0%
	% of Total	1.3%	77.5%	21.3%	100.0%

According to Table 4.23, ages with category 25-35 years old is considered then the OSH knowledge is good with 41.3%. Ages with category 36-45 years old is classified with OSH knowledge is good with 33.8%. Ages with category 46-55 years old, then the OSH knowledge is considered as good with 2.5%. Ages with category >55 years old, then the OSH knowledge is considered very good with 2.5%.

Table 4.24 Age and OSH knowledge significance value result

Chi-Square Tests			
	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	15.973 ^a	6	.014
Likelihood Ratio	16.595	6	.011
Linear-by-Linear Association	14.050	1	.000
N of Valid Cases	80		

The significance value is 0.014. If significance < 0.05 then, it is considered that there is correlation between ages and OSH knowledge.

Table 2.25 Age and OSH knowledge contingency coefficient result

Symmetric Measures			
		Value	Approx. Sig.
Nominal by Nominal	Contingency Coefficient	.408	.014
N of Valid Cases		80	

The Pearson contingency coefficient is 0.408. This value is used as the comparison to the other comparison with one same indicator.

e. Comparison between age and work accident prevention

There are three results of the comparison between age and work accident prevention. First, crosstab analysis is conducted to identify whether there is a correlation or relationship between age and work accident prevention. Chi square test, to find significance value, if significance (p) value is < 0.05 then there is positive correlation between age and work accident prevention. The results of this comparison are shown in Table 4.26, 4.27, and 4.28 below.

Table 4.26 Comparison between age and work accident prevention crosstab

Age		Work Accident Prevention			Total
		Good Enough	Good	Very Good	
25 - 35	Count	9	27	0	36
	% within Ages	25.0%	75.0%	.0%	100.0%
	% of Total	11.3%	33.8%	.0%	45.0%
36 - 45	Count	0	38	1	39
	% within Ages	.0%	97.4%	2.6%	100.0%
	% of Total	.0%	47.5%	1.3%	48.8%
46 - 55	Count	0	3	0	3
	% within Ages	.0%	100.0%	.0%	100.0%
	% of Total	.0%	3.8%	.0%	3.8%
> 55	Count	0	1	1	2
	% within Ages	.0%	50.0%	50.0%	100.0%
	% of Total	.0%	1.3%	1.3%	2.5%
Total	Count	9	69	2	80
	% within Ages	11.3%	86.3%	2.5%	100.0%
	% of Total	11.3%	86.3%	2.5%	100.0%

Age with category 25-35 years old is considered as high work accident prevention with 33.8%. Age with category 36-45 years old is considered as high work accident prevention with 47.5%. Age with category 46-55 years old is considered as high work accident prevention with 3.8%. Age with category >55 years old, then the work accident prevention is considered as high and very high with 1.3% for both.

Table 4.27. Age and work accident prevention significance value result

Chi-Square Tests			
	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	31.490 ^a	6	.000
Likelihood Ratio	21.933	6	.001
Linear-by-Linear Association	14.927	1	.000
N of Valid Cases	80		

The significance value is 0.000. If significance < 0.05 then it is concluded that there is correlation between age and work accident prevention.

Table 4.28. Age and work accident prevention contingency coefficient result

Symmetric Measures			
		Value	Approx. Sig.
Nominal by Nominal	Contingency Coefficient	.531	.000
N of Valid Cases		80	

The Pearson contingency coefficient is 0.531. This value is used as the comparison to the other comparison with one same indicator.

f. Comparison between age and human resource management

There are three results of the comparison between age and human resources management. First crosstab analysis that designated to identify whether there is a correlation or relationship between age and human resources. Chi-square test to find significance value, if significance (p) value is < 0.05, then there is positive correlation between age and human resources management. The results of this comparison are shown in Table 4.29, 4.30, and 4.31 below.

Table 4.29 Comparison between age and human resource management crosstab

Age		Human Resources Management			Total
		Good Enough	Good	Very Good	
25 - 35	Count	9	25	2	36
	% within Ages	25.0%	69.4%	5.6%	100.0%
	% of Total	11.3%	31.3%	2.5%	45.0%
36 - 45	Count	7	16	16	39
	% within Ages	17.9%	41.0%	41.0%	100.0%

Age		Human Resources Management			Total
		Good Enough	Good	Very Good	
46 - 55	% of Total	8.8%	20.0%	20.0%	48.8%
	Count	0	0	3	3
	% within Ages	.0%	.0%	100.0%	100.0%
	% of Total	.0%	.0%	3.8%	3.8%
> 55	Count	0	1	1	2
	% within Ages	.0%	50.0%	50.0%	100.0%
	% of Total	.0%	1.3%	1.3%	2.5%
	Count	16	42	22	80
Total	% within Ages	20.0%	52.5%	27.5%	100.0%
	% of Total	20.0%	52.5%	27.5%	100.0%

Age with category 25-35 years old is considered as good in human resources management with 31.3%. Age with category 36-45 years old is considered as good and very good in human resources management with 20.0%. Age with category 46-55 years old is considered as very good in human resource management with 3.8%. Age with category >55 years old, then the human resource management is considered as good and very good with 1.3% for both.

Table 4.30 Age and human resource management significance value result

Chi-Square Tests			
	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	21.057 ^a	6	.002
Likelihood Ratio	23.842	6	.001
Linear-by-Linear Association	11.586	1	.001
N of Valid Cases	80		

The significance value is 0.002. If significance < 0.05, then it can be concluded that there is correlation between age and human resources management.

Table 4.31. Age and human resource management contingency coefficient result

Symmetric Measures			
		Value	Approx. Sig.
Nominal by Nominal	Contingency Coefficient	.456	.002
N of Valid Cases		80	

The Pearson contingency coefficient is 0.456. This value is used as the comparison to the other comparison with one same indicator.

g. Comparison between prior education and OSH knowledge

There are three results of the comparison between prior education and OSH knowledge. First, crosstab analysis is designated to identify whether there is a correlation or relationship between prior education and OSH knowledge. Chi square test, to find significance value, if significance (p) value is < 0.05 then there is positive correlation between prior education and OSH knowledge. The results of this comparison are shown in Table 4.32, 4.33, and 4.34 below.

Table. 4.32. Comparison between prior education and OSH knowledge crosstab

Prior education		Human Resources Management			Total
		Good Enough	Good	Very Good	
SMA/ SMK	Count	0	39	2	41
	% within Prior education	.0%	95.1%	4.9%	100.0%
	% of Total	.0%	48.8%	2.5%	51.3%
S1	Count	1	23	15	39
	% within Prior education	2.6%	59.0%	38.5%	100.0%
	% of Total	1.3%	28.8%	18.8%	48.8%
Total	Count	1	62	17	80
	% within Prior education	1.3%	77.5%	21.3%	100.0%
	% of Total	1.3%	77.5%	21.3%	100.0%

The result from crosstab in Table 4.32, if prior education is SMA/SMK then the OSH knowledge is good with 48.8%. If prior education is bachelor (S1), then OSH knowledge is good with 28.8%.

Table 4.33. Prior education and OSH knowledge significance value result

Chi-Square Tests			
	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	15.030 ^a	2	.001
Likelihood Ratio	16.764	2	.000
Linear-by-Linear Association	10.266	1	.001
N of Valid Cases	80		

The significance value is 0.001. If significance < 0.05 then there is correlation between prior education and OSH knowledge.

Table 4.34. Prior education and OSH knowledge contingency coefficient result

Symmetric Measures		Value	Approx. Sig.
Nominal by Nominal	Contingency Coefficient	.398	.001
N of Valid Cases		80	

The Pearson contingency coefficient is 0.398. This value is used as the comparison to the other comparison with one same indicator.

h. Comparison between prior education and work accident prevention

There are three results of the comparison between prior education and work accident prevention. First, crosstab analysis is conducted to identify whether there is a correlation or relationship between prior education and work accident prevention. Chi square test to find significance value, if significance (p) value is < 0.05 then there is positive correlation between prior education and work accident prevention. The results of this comparison are shown in Table 4.35, 4.36, and 4.37 below.

Table 4.35. Comparison between prior education and work accident prevention crosstab

Prior education		Work Accident Prevention			Total
		Medium	High	Very High	
SMA/ SMK	Count	8	33	0	41
	% within Prior education	19.5%	80.5%	.0%	100.0%
	% of Total	10.0%	41.3%	.0%	51.3%
S1	Count	1	36	2	39
	% within Prior education	2.6%	92.3%	5.1%	100.0%
	% of Total	1.3%	45.0%	2.5%	48.8%
Total	Count	9	69	2	80
	% within Prior education	11.3%	86.3%	2.5%	100.0%
	% of Total	11.3%	86.3%	2.5%	100.0%

Based on the result of crosstab table above, if prior education is SMA/SMK then work accident prevention is good with 41.3%. If prior education is bachelor (S1), then work accident prevention is good with 45.0%.

Table 4.36 Prior education and work accident prevention significance value result

Chi-Square Tests			
	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	7.530 ^a	2	.023
Likelihood Ratio	9.051	2	.011
Linear-by-Linear Association	7.408	1	.006
N of Valid Cases	80		

The significance value is 0.023. If significance < 0.05 then, it can be concluded that there is correlation between prior education and work accident prevention.

Table 4.37 Prior education and work accident prevention contingency coefficient result

Symmetric Measures			
		Value	Approx. Sig.
Nominal by Nominal	Contingency Coefficient	.293	.023
N of Valid Cases		80	

The Pearson contingency coefficient is 0.293. This value is used as the comparison to the other comparison with one same indicator.

i. Comparison between prior education and human resource management

There are three results of the comparison between prior education and human resources management. First, crosstab analysis is applied to identify whether there is a correlation or relationship between human resources management and work accident prevention. Chi square test to find significance value, if significance (p) value is < 0.05 then there is positive correlation between human resources management and work accident prevention. The results of this comparison are shown in Table 4.38, 4.39, and 4.40 below.

Table 4.38 Prior education and human resource management crosstab

Prior education		Human Resources Management			Total
		Good Enough	Good	Very Good	
SMA/ SMK	Count	12	26	3	41
	% within Prior education	29.3%	63.4%	7.3%	100.0%
	% of Total	15.0%	32.5%	3.8%	51.3%
S1	Count	4	16	19	39
	% within Prior education	10.3%	41.0%	48.7%	100.0%

Prior education		Human Resources Management			Total
		Good Enough	Good	Very Good	
	% of Total	5.0%	20.0%	23.8%	48.8%
	Count	16	42	22	80
Total	% within Prior education	20.0%	52.5%	27.5%	100.0%
	% of Total	20.0%	52.5%	27.5%	100.0%

Based on the result of crosstab table above, if prior education is SMA/SMK then the human resources management is good with 32.5%. If prior education is bachelor (S1), then the human resources management is very good with 23.8%.

Table 4.39. Prior education and human resource management significance value result

Chi-Square Tests			
	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	17.979 ^a	2	.000
Likelihood Ratio	19.513	2	.000
Linear-by-Linear Association	15.347	1	.000
N of Valid Cases	80		

The significance value is 0.000. If significance < 0.05 then, it is concluded that there is correlation between prior education and human resources management.

Table 4.40. Prior education and human resource management contingency coefficient result

Symmetric Measures			
		Value	Approx. Sig.
Nominal by Nominal	Contingency Coefficient	.428	.000
N of Valid Cases		80	

The Pearson contingency coefficient is 0.428. This value is used as the comparison to the other comparison with one same indicator.

j. Comparison between work period and OSH knowledge

There are three results of the comparison between work period and OSH knowledge. First, crosstab analysis is applied to identify whether there is a correlation or relationship between work period and OSH knowledge. Chi square test to find significance value, if

significance (p) value is < 0.05 then, there is positive correlation between work period and OSH knowledge. The results of this comparison are shown in Table 4.41, 4.42, and 4.43 below.

Table 4.41. Comparison between work period and OSH knowledge crosstab

Work period		Occupational Health and Safety			Total
		Knowledge			
		Good Enough	Good	Very Good	
1 – 5	Count	1	31	1	33
	% within Work period	3.0%	93.9%	3.0%	100.0%
	% of Total	1.3%	38.8%	1.3%	41.3%
6 - 10	Count	0	22	6	28
	% within Work period	.0%	78.6%	21.4%	100.0%
	% of Total	.0%	27.5%	7.5%	35.0%
11 - 15	Count	0	8	8	16
	% within Work period	.0%	50.0%	50.0%	100.0%
	% of Total	.0%	10.0%	10.0%	20.0%
16 - 20	Count	0	1	2	3
	% within Work period	.0%	33.3%	66.7%	100.0%
	% of Total	.0%	1.3%	2.5%	3.8%
Total	Count	1	62	17	80
	% within Work period	1.3%	77.5%	21.3%	100.0%
	% of Total	1.3%	77.5%	21.3%	100.0%

The result of crosstab on Table 4.41, if the work period is between 1-5 years then their OSH knowledge is considered as good with 38.8%. If work period is between 6-10 years, then OSH knowledge is considered as good with 27.5%. If work period is between 11-15 years, then OSH knowledge is considered as good and very good with 10.0% for both. If work period is between 16-20 years, then OSH knowledge is considered very good with 2.5%.

Table 4.42. Work period and OSH knowledge significance value result

Chi-Square Tests			
	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	19.187 ^a	6	.004
Likelihood Ratio	20.072	6	.003
Linear-by-Linear Association	18.093	1	.000
N of Valid Cases	80		

The significance value is 0.004. If significance < 0.05, then it is concluded that there is correlation between work period and OSH knowledge.

Table 4.43. Work period and OSH knowledge contingency coefficient result

Symmetric Measures		Value	Approx. Sig.
Nominal by Nominal	Contingency Coefficient	.440	.004
N of Valid Cases		80	

The Pearson contingency coefficient is 0.440. This value is used as the comparison to the other comparison with one same indicator.

k. Comparison between work period and work accident prevention

There are three results of the comparison between work period and work accident prevention. First, crosstab analysis is applied to identify whether there is a correlation or relationship between work period and work accident prevention. Chi square test to find significance value, if significance (p) value is < 0.05 then, it is concluded that there is positive correlation between work period and work accident prevention. The results of this comparison are shown in Table 4.44, 4.45, and 4.46 below.

Table 4.44. Comparison between work period and work accident prevention crosstab

Work period		Work Accident Prevention			Total
		Medium	High	Very High	
1 – 5	Count	6	27	0	33
	% within Work period	18.2%	81.8%	.0%	100.0%
	% of Total	7.5%	33.8%	.0%	41.3%
6 - 10	Count	3	25	0	28
	% within Work period	10.7%	89.3%	.0%	100.0%
	% of Total	3.8%	31.3%	.0%	35.0%
11 - 15	Count	0	15	1	16
	% within Work period	.0%	93.8%	6.3%	100.0%
	% of Total	.0%	18.8%	1.3%	20.0%
16 - 20	Count	0	2	1	3
	% within Work period	.0%	66.7%	33.3%	100.0%
	% of Total	.0%	2.5%	1.3%	3.8%
Total	Count	9	69	2	80
	% within Work period	11.3%	86.3%	2.5%	100.0%
	% of Total	11.3%	86.3%	2.5%	100.0%

The comparison between work period and work accident prevention crosstab on Table 4.44, if the work period is between 1-5 years then their work accident prevention is high with 33.8%. If work period is between 6-10 years, then their work accident prevention is high with 31.3%. If the work period is categorized between 11-15 years, then work accident prevention high with 18.8%. If work period is between 16-20 years, then their work accident prevention is high with 2.5%.

Table 4.45. Work period and work accident prevention significance value result

Chi-Square Tests			
	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	17.730 ^a	6	.007
Likelihood Ratio	12.833	6	.046
Linear-by-Linear Association	8.259	1	.004
N of Valid Cases	80		

The significance value is 0.007. If significance < 0.05 then, it is concluded that there is correlation between work period and work accident prevention.

Table 4.46. Work period and work accident prevention contingency coefficient result

Symmetric Measures			
		Value	Approx. Sig.
Nominal by Nominal	Contingency Coefficient	.426	.007
N of Valid Cases		80	

The Pearson contingency coefficient is 0.426. This value is used as the comparison to the other comparison with one same indicator.

1. Comparison between work period and human resource management

Crosstab analysis is applied to identify if there is a correlation or relationship between work period and human resources management. Chi square test to find significance value, if significance (p) value is < 0.05 then there is positive correlation between work period and human resources management. The results of this comparison are shown in Table 4.47, 4.48, and 4.49 below.

Table 4.47. Comparison between work period and human resource management crosstab

Work period		Human Resources Management			Total
		Medium	High	Very High	
1 – 5	Count	8	23	2	33
	% within Work period	24.2%	69.7%	6.1%	100.0%
	% of Total	10.0%	28.8%	2.5%	41.3%
6 - 10	Count	7	12	9	28
	% within Work period	25.0%	42.9%	32.1%	100.0%
	% of Total	8.8%	15.0%	11.3%	35.0%
11 - 15	Count	1	6	9	16
	% within Work period	6.3%	37.5%	56.3%	100.0%
	% of Total	1.3%	7.5%	11.3%	20.0%
16 - 20	Count	0	1	2	3
	% within Work period	.0%	33.3%	66.7%	100.0%
	% of Total	.0%	1.3%	2.5%	3.8%
Total	Count	16	42	22	80
	% within Work period	20.0%	52.5%	27.5%	100.0%
	% of Total	20.0%	52.5%	27.5%	100.0%

According to crosstab on Table 4.47, if the work period is between 1-5 years then human resources management is good with 28.8%. If work period is between 6-10 years, then human resources management is good with 15.0%. If work period is between 11-15 years, then human resources management is very good with same 11.3%. If work period is between 16-20 years, then human resources management is very good with 2.5%.

Table 4.48. Work period and human resource management significance value result

Chi-Square Tests			
	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	18.228 ^a	6	.006
Likelihood Ratio	20.275	6	.002
Linear-by-Linear Association	12.533	1	.000
N of Valid Cases	80		

The significance value is 0.006. If significance < 0.05 then, it is concluded that there is correlation between work period and human resources management.

Table 4.49. Work period and human resource management contingency coefficient result

Symmetric Measures			
		Value	Approx. Sig.
Nominal by Nominal	Contingency Coefficient	.431	.006
N of Valid Cases		80	

The Pearson contingency coefficient is 0.431. This value is used as the comparison to the other comparison with one same indicator.

CHAPTER V

DISCUSSION

5.1. Descriptive Analysis Discussion

There are two aspects of descriptive analysis, the respondent profile and questionnaire results from all three indicators. Based on the result in respondent age, the age of most workers in PT. Ganding Toolsindo are ranged from 36-45 years old then followed by age category of 25-35 years old. This indicates that the workers in PT. Ganding Toolsindo are dominated by productive age. Productive age ranged between 15-64 years old. Simanjuntak (1985) stated that if the worker's age goes up, the productivity level of the employee will increase because the worker is in the productive age and position. If the worker is getting older, the level of work productivity will decrease due to the limitation of physical and health factors that influence.

Worker's prior education in PT. Ganding Toolsindo are dominated by workers from Senior High School (SMA/SMK). Since the worker recruitment in this company is close type recruitment, hence many internal workers in PT. Ganding Toolsindo invite their own family or friends to work in PT. Ganding Toolsindo. This is one of the causes why most of the workers in PT. Ganding Toolsindo were graduated from SMA/SMK.

Most of workers in PT. Ganding Toolsindo have already worked for 1-5 years. The company used contract system for their workers. They are provided with two parts of contract. First, they are provided with two years contract. Then, the contract can be extended for maximum another two years. Later, they must decide to make the worker as a permanent employee or the contract will expire.

There are three indicators in questionnaire which are used to measure workers and company capability. Based on the result table, histogram and mean statistics, the result of all three indicators will be discovered. Occupational safety and health knowledge

is in good category. This is proven by banner that published by PT. Ganding Toolsindo, the obligation to use PPE during working hour, and the warning of potential hazard in specific area. All of them are shown in Figure 5.1, 5.2, 5.3, 5.4 below.

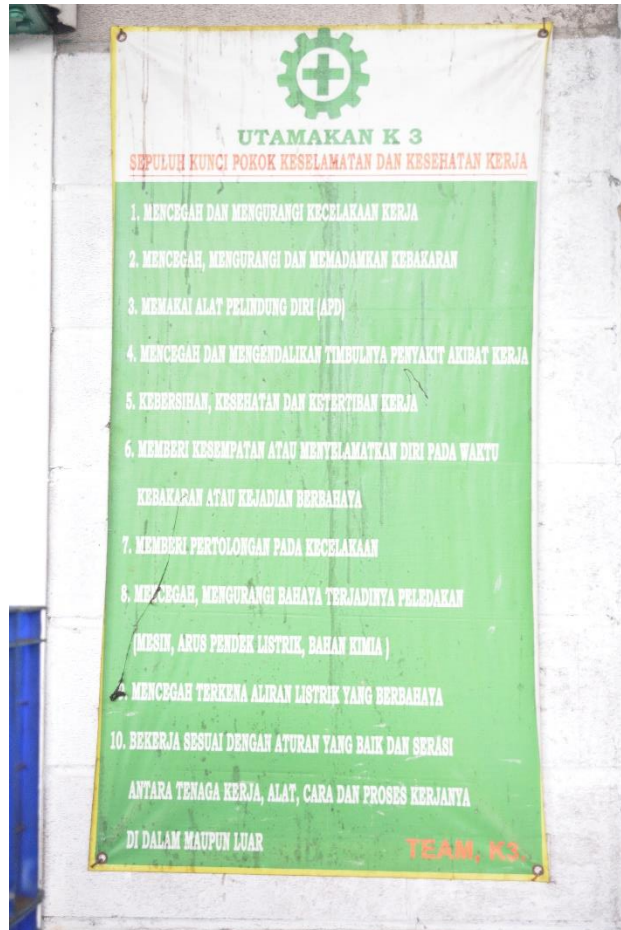


Figure 5.1. Occupational Safety and Health banner



Figure 5.2. Potential hazard warning



Figure 5.3. The obligation to use PPE

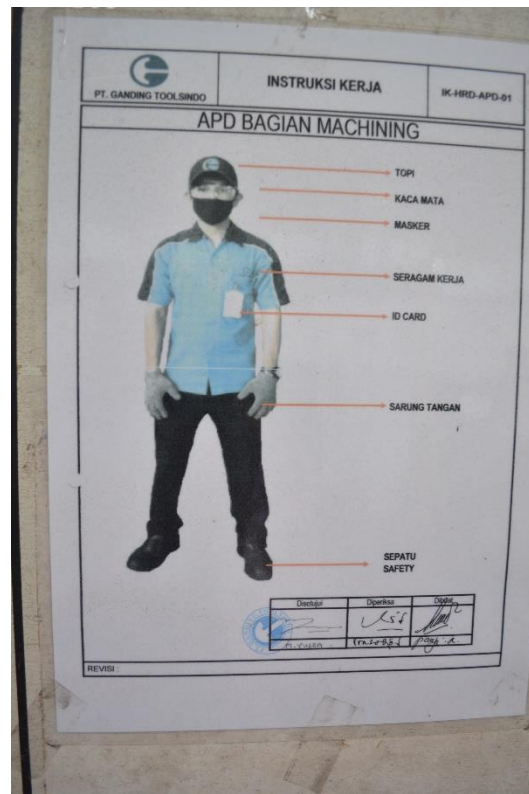


Figure 5.4. How to use Personal Protective Equipment based on worker's job description

Worker's work accident prevention is in high category. This is proven by image placed on the machine about type of work accident to high voltage. Safety sign about high voltage also placed above them. In 2015 PT. Ganding Toolsindo has work program to identify potential hazard by providing punishment and e reward to every worker. The image of work accident type and safety sign are shown in Figure 5.5 below.

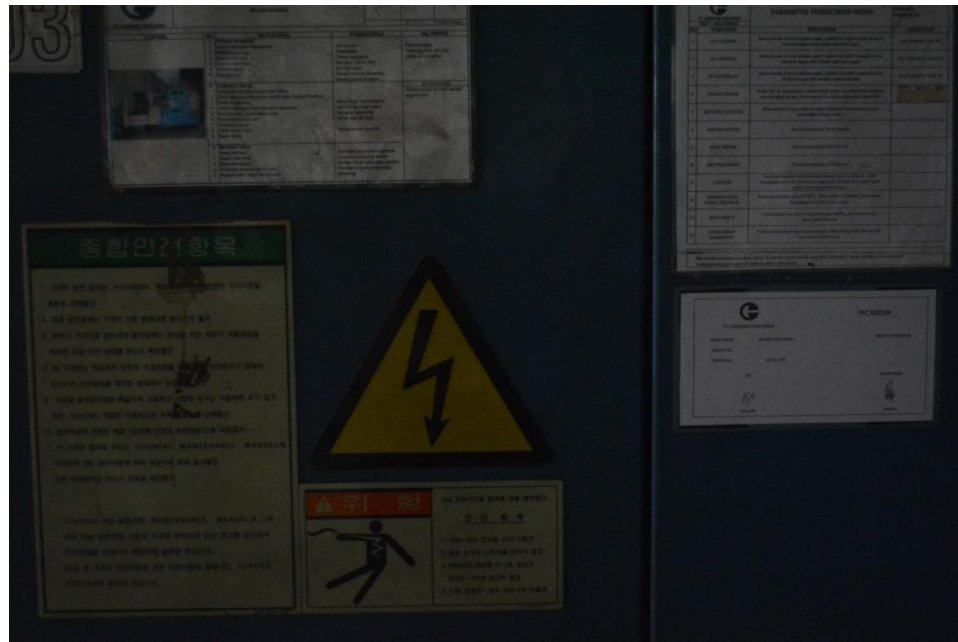


Figure 5.5. Safety sign and work accident type image

PT. Ganding Toolsindo has good human resources management. This is indicated by job description 2014 number four-point e that stated “to carry out monitoring of work nutrition and organize food in the company and develop occupational safety health.” The company provides free lunch for their workers during lunch break. In number 5 of P2K3 job description about “Help company leader to formulate management policies and work guidelines in order to improve the safety of work, company hygiene, occupational health, ergonomics, and labor nutrition”, then in 2015, they have implemented work planning to improve human resources, and conduct internal and external training. Figure 5.6 shows banner of 5S and OSH in PT. Ganding Toolsindo.



Figure 5.6. 5S and Occupational Safety and Health competition banner

The conclusion is the PT. Ganding Toolsindo as Small Medium Enterprises has good human resources management, good OSH knowledge from their workers with high prevention rate of work accident.

5.2. Chi Square Discussion

5.2.1. Crosstab Result Discussion

The crosstab analysis is a table-shaped analysis method, where cross-tabulation or contingency tables are used to identify whether there is a correlation or relationship between one variable with another. There are twelve results of crosstab analysis. The conclusions are made after the crosstab are measured.

The result from crosstabulation of comparison between OSH knowledge and work accident prevention, if OSH knowledge is good, then the work accident prevention is high. This indicates that the workers in PT. Ganding Toolsindo have a good OSH knowledge and that influence the increased prevention of work accident. In 2015, they conducted work planning about identification of potential hazard, PPE socialization and punishment to their workers if they have violated the rule. This is important, because the meaning of work safety is to control the accident or loss, and identify and eliminate unacceptable risk (Wowo Sunaryo Kuswana, 2017).

Based on the result of crosstab on comparison between human resources management and work accident prevention, then it can be resumed that if the human resources management is good, then the work accident prevention is high. This indicates that PT. Ganding Toolsindo has good human resource management which influence to the increasing prevention of work accident. In 2015 company have initiated work planning to establish the P2K3 that has been authorized by *Disnaker* Bekasi. One of the main tasks from P2K3 is to “Conduct hazard analysis and provide solutions as well as strive to safeguard / reduce the occurrence of hazards in the company environment”.

According to the result of crosstab from comparison between OSH knowledge and human resource management, if OSH knowledge are good, then the human resources

management is good. This indicated by good OSH knowledge from the workers that can influence human resources management. PT. Ganding Toolsindo has initiated work planning to conduct K3L (OSH and Environment) training to improve their workers' OSH knowledge in 2015. They also made K3L information and post it on bulletin board.

The explanation from crosstab of comparison between age and OSH knowledge, age with category 25-35 years old will has good OSH knowledge. This indicates that even the company is dominated by young workers, their OSH knowledge are considerably good. Since 2015, there are several works planning to improve worker's OSH knowledge. There are PPE socialization that followed by punishment if they have violated the rule. PT. Ganding Toolsindo also has carried out K3L and safety training.

Based on the result of crosstab on the comparison between age and work accident prevention age with category 36-45 years old, will has high prevention of work accident. This indicates even the older workers have high rate prevention of work accident. PT. Ganding Toolsindo since 2015 routinely have identified potential hazards by implementing reward and punishment. Suma'mur (1985) stated that workers over 30 years old are more cautious, more credible, and more aware of dangers than younger workers. Although the reality still needs to be reviewed directly in the company itself. The results prove that the statement is valid.

The result of crosstab on comparison between age and human resources management, age with category 25-35 years old will has good human resources management. The conclusion is the younger the workers are, the better their human resources management will be. PT. Ganding Toolsindo has a contract system in recruiting their workers. The work contract lasts only two years and will be extended to a maximum of two years. If permanent workers that appointed later are young workers, then the development of human resource management will increase.

Comparison of prior education and OSH knowledge, if prior education is SMA/SMK then the OSH knowledge is good. This indicates workers in PT. Ganding Toolsindo have good OSH knowledge even though they have just graduated from senior high school. Formal education is actually spread expectations about the level and type of

education that targeted on behavioral changes, such as changes in knowledge, attitudes and abilities. Formal education has ever taken by a majority of workers became one of the predisposing factors which contribute to workers to make it easier to understand and know about the safety procedures that apply in the workplace (Notoatmodjo, 2003). Senior high school and vocational high school (SMK) is considered capable to work, where student from vocational high school especially prepared to be ready to work.

Comparison of prior education and work accident prevention, if prior education is bachelor (S1), then work accident prevention is good. A person's level of education will affect the insight and perspective in facing a problem. A person with a high level of education tends to adjust the ratio when dealing with new ideas than those with lower education (Notoatmodjo, 2003). This indicates that the higher their prior education the better the prevention of work accident rate in company.

Based on the result of crosstab on prior education and human resources management, it can be resumed that if prior education is SMA/SMK then the human resources management is good. P2K3 job description 2014 number 4 point a, they assist management in work evaluation, process and environment and determine corrective actions with the best alternative. In 2015 work planning, they have already conducted external and internal training to improve their human resources. This indicates that PT. Ganding Toolsindo has good human resources management even though their workers are dominated by senior high school graduates.

Based on the result of crosstab on comparison between the work period and OSH knowledge, it can be concluded that if the work period is between 1-5 years then their OSH knowledge is good. The company already carried out work plan about PPE socialization and punishment if the workers do not apply them, and they have safety training and K3L training. Training applies to all new and old employees. This indicates that even though they are considered as new workers in PT. Ganding Toolsindo, they already have a good OSH knowledge.

Based on the result of crosstab on comparison between work period and work accident prevention, it can be resumed that if the work period is between 1-5 years then

their work accident prevention is high. One of routine activities in PT. Ganding Toolsindo is to identify the potential hazard. The company applies a punishment for every worker who violated the rules and reward if they follow them. Reward and punishment applied for both new and older worker. This indicates that even though they are considered as new worker in PT. Ganding Toolsindo, they have a high prevention of work accident rate.

Based on the result of crosstab on comparison between work period and human resources management, it can be resumed that if the work period is between 1-5 years then human resources management is good. The company has health insurance (BPJS) facility for both new and old workers. They also have quality policy to improve their human resources by providing consistent training services to become professionals. This indicates that PT. Ganding Toolsindo has good human resources management even to the new workers.

5.2.2. Chi Square Test Discussion

There are twelve comparisons in chi square-test. The significance value is concluded if the result is matched with hypothesis. The value is used to compare with the other comparison and identify which indicators are the most influencing over other indicators. The results of chi square test are shown in Table 5.1 below.

Table 5.1. Conclusion Result of Chi-Square Test

No.	Comparison	Significance	Value
1	OSH Knowledge and Work Accident Prevention	.039	.334
2	Human Resource Management and Work Accident Prevention	.031	.343
3	OSH Knowledge and Human Resource Management	.000	.504
4	Age and OSH Knowledge	.014	.408
5	Ages and Work Accident Prevention	.000	.531
6	Age and Human Resource Management	.002	.456
7	Prior education and OSH Knowledge	.001	.398
8	Prior education and Work Accident Prevention	.023	.293
9	Prior education and Human Resources Management	.000	.428
10	Work period and OSH Knowledge	.004	.440
11	Work period and Work Accident Prevention	.007	.426
12	Work period and Human Resource Management	.006	.431

Comparison between OSH knowledge and human resources management (0.504) has higher value than comparison between OSH knowledge and work accident prevention (0.334). This means that the OSH knowledge has higher influence to human resources management than prevention of work accident. By conducting K3L training in 2015 and posted K3L information on bulletin board are the proofs that work planning can improve their workers' OSH knowledge and human resource management.

Comparison between OSH knowledge and work accident prevention has higher value than comparison between human resource management and work accident prevention. This means that the work accident prevention has stronger influence towards OSH knowledge. PT. Ganding Toolsindo conducts work planning on identification of potential hazard, PPE socialization and punishment to their workers if violated the rule. That will improve worker's OSH knowledge and work accident prevention.

Comparison between age and work accident prevention has higher value than the other two comparisons like age and human resources management, and comparison between age and human resources management. PT. Ganding Toolsindo has routine activity to identify potential hazards by implementing reward and punishment. This means that ages of the workers have a strong influence to work accident prevention. Suma'mur (1985) stated that workers over 30 years old are more cautious, more credible, and more aware of dangers than younger workers.

Comparison between prior education and human resources management have a higher value than the other comparison like prior education and OSH knowledge and comparison between prior education and work accident prevention. This means prior education has strong influence to human resource management. P2K3 in PT. Ganding Toolsindo assists management in work evaluation, process and environment and determine corrective actions with the best alternative. They also conducted external and internal training to improve their human resources.

Comparison between work period and OSH knowledge has the highest value. It is followed by comparison between work period and accident prevention and comparison between work period and human resources management. This means that OSH

knowledge of workers has strong influence to the work period. In 2015, PT. Ganding Toolsindo has carried out work plan about PPE socialization, safety training and K3L training that applied for both new and permanent workers to improve their OSH knowledge.

Based on the result of the questionnaire, the workers in PT. Ganding Toolsindo already have a good OSH knowledge, high prevention of work accident rate and good human resources management. Hypothesis says, if $p < 0.05$ this means that there is an influence of worker's OSH knowledge to OSH implementation for minimizing work accident. H_o are rejected and H_a are accepted. Based on chi square test, the significance value for all of the comparisons is < 0.05 . This means that there is an influence of worker's OSH knowledge to OSH implementation in minimizing work accident. The conclusion states that chi square test result and the hypothesis have the same result. PT. Ganding Toolsindo should maintain all indicators that obtain positive results and improve them.

5.3. Observation Result Analysis

Based on the directed observation in PT. Ganding Toolsindo, there are facts about their implementation of OSH. The result of observation are shows in Figure 5.1 and 5.2 below.



Figure 5.7. Driver



Figure 5.8. Stamping

Based Based on the figure above, there are some workers who still didn't use Personal Protective Equipment, yet no punishment has been applied for the violated workers. Rules about the obligation to use PPE during working hour and the equipment based on their position already made. However, they have a good OSH knowledge, high prevention of work accidents rate, and human resource management. Ismed Somad (2013) stated that, there are several causes of regulatory violations, such as:

- a. Do not understand about the procedure: Workers do not know how to implement it according to procedure.
- b. Low concern.
- c. Workers feel that procedures slow down their performance, inconsistent with the benefits to be achieved if done quickly.
- d. Gap procedures with field facts, workers feel the procedure is not in accordance with the facts.

- e. Excessive optimism. If work can be completed immediately, workers will get incentives so that workers feel optimistic their work can be completed quickly.
- f. Specific reason: Workers want to finish their job immediately because of an operation problem.

After conducting the research, there are several evidences from work accident case. In 2016 there six cases of work accident and in 2017 are two cases. The data of accident cases are shown in the Table 5.2 and Table 5.3 below.

Table 5.2. Work Accident Cases in 2016

No	Ages	Work Accident Cases Status	Dept/Div	Chronology	Part of Body Injured	Action taken
1	34	Minor injuries	Maintenance	When rolling the rest of the material coil, rolls fall and bounce on the left elbow resulted in scars, in the palm of his right hand.	Left elbow	Went to the hospital and got stitched
2	28	Minor injuries	Production			Got medicine (betadine)
3	26	Minor injuries	Production	When taking material, the index finger is injured	Right hand finger	Got medicine (betadine)
4	31	Minor injuries	Production	When taking the material and pushing the material position straight, suddenly the material fell on the right hand and the trolley hit the right calf	Right hand is torn, Right calf swollen	Went to the hospital and got stitched
5	32	Minor injuries	Production			
6	25	Minor injuries	Production			

Table 5.3. Work Accident Cases in 2017

No	Ages	Work Accident Cases Status	Dept/Div	Chronology	Part of Body Injured	Action taken
1	33	Serious Injuries	Production	When 4/4-part part sil 6 1wd, he put the part on one of the buttons that resulted in the machine down itself.	Three fingers of the right hand	Went to the hospital and got amputated
2	30	Minor Injuries	PPIC	When he pulled the punching material, but the material did not move and was forcibly pulled away when the left ring finger was torn	The left-hand finger is torn	Went to the hospital

Having a good OSH knowledge, worker will understand occupational risk and dangers. A large proportion of occupational hazards in the workplace can be prevented or controlled through different measures, such as safe work practices, appropriate tools, work organization and provision of information to the workers to enable them to minimize risks while performing their duties. Workers should therefore be well informed of hazards and adequately trained to carry out their tasks safely.

OSH training at all levels should be emphasized as a means of improving working conditions and the work environment, and thus inculcating a healthy and safe work culture. Despite awareness campaigns conducted through promotion and public talks for many years, the knowledge of OSH is still not up to the desired level. Healthcare organizations should plan a more focused strategy, such as conducting more workshops and training for specific healthcare worker groups. The strategy should be altered to impart more practical knowledge rather than merely increasing awareness of OSH issues (Lugah, 2010).

Results of the descriptive and chi-square analysis from questionnaire are positive. However, the facts in company suggested that there are several workers who are still violated the rule on using PPE during working hour. The solution to solve problem about their unawareness in the obligation to use PPE during working hour is still becoming a limitation for this study and need to be improved in further research.

CHAPTER VI

CONCLUSION AND RECOMMENDATION

6.1. Conclusion

Twelve indicators are used to discover the problem. Occupational Safety and Health knowledge and work accident prevention significance score is $0.039 < 0.05$. Human Resource Management and work accident prevention significance score is $0.031 < 0.05$. Occupational Safety and Health knowledge and Human Resource Management significance score is $0.000 < 0.05$. Age and Occupational Safety and Health knowledge significance score is $0.014 < 0.05$. Ages and work accident prevention significance score is $0.000 < 0.05$. Age and Human Resource Management significance score is $0.002 < 0.05$. Prior education and OSH knowledge significance score is $0.001 < 0.05$. Prior education and work accident prevention significance score is $0.023 < 0.05$. Prior education and Human Resources Management significance score is $0.000 < 0.05$. Work period and OSH Knowledge significance score is $0.004 < 0.05$. Work period and work accident prevention significance score is $0.007 < 0.05$. Work period and Human Resource Management significance score is $0.006 < 0.05$. Significance value for all of the indicator comparisons in chi-square is < 0.05 , which means there is an influence of workers' OSH knowledge to increasing work safety. Workers in PT. Ganding Toolsindo already have a good OSH knowledge, high prevention of work accident and good human resources management. Worker will understand occupational risk and dangers if they have good OSH knowledge. However, OSH training at all levels should be emphasized as a means of improving working conditions and the work environment because there is some worker who still did not used Personal Protective Equipment. The strategy should be altered to impart more practical knowledge rather than merely increasing awareness of OSH issues.

6.2. Recommendation

PT. Ganding Toolsindo should maintain all of indicators which obtain positive results and improve them, such as worker's OSH knowledge, the work accident prevention and human resource management. However, the facts in company indicate that there are several workers who are still violated the rule on obligation to use PPE during working hour. Moreover, the future study needs to solve problem about their unawareness in the obligation to use PPE during working hour.

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APPENDIX A. QUESTIONNAIRE

ATTACHMENT

INFLUENCE OF WORKER'S OCCUPATIONAL SAFETY AND HEALTH KNOWLEDGE TO INCREASE WORK SAFETY IN PT. GANDING TOOLSINDO

1.1.Introduction

Assalamua'laikum wr. wb.

I am from FTI UII Industrial Engineering degree student who is doing research about influence of worker's occupational safety and health to increase work safety in PT. Ganding Toolsindo Cikarang 2017. Please fill the questionnaire below. This questionnaire are using for research purpose only and will not affect your work. For the time, energy, and thought you have given me, thank you very much.

1.2.Filling Instruction

1. Please answer the question according to your circumstances and opinions honestly.
2. Choose one of the answers with a check (✓) to the appropriate number.

1.3.Respondent Data

1. Name :
2. Division :
3. Age :
4. Prior Education :
5. Work Period :

OCCUPATIONAL SAFETY AND HEALTH KNOWLEDGE						
No.	Question	Answer				
		Strongly disagree	Disagree	Probably disagree	Agreed	Strongly agreed
1	My work environment already implemented good Occupational Safety and Health.					
2	I join OSH training which are conducted by company regularly.					
3	Company already made a clear OSH rules.					
4	PT. Ganding Toolsindo already has OSH committee					
5	Employees are encouraged to have concerns about OSH issues.					
6	OSH committee in my company did OSH a routine audit.					
7	Personal Protective Equipment (example: gloves, safety glasses, etc) are always available.					
8	I am not bothered using Personal Protective Equipment during work hour.					
9	I always use Personal Protective Equipment even when I'm busy.					
10	I feel the company need to supervise when using Personal Protective Equipment.					
11	I will remind the other employee if they are not using Personal Protective Equipment during work hour.					
12	I think PT. Ganding Toolsindo already free from potential hazard.					
13	I will reporting the potential hazard in work environment immediately to the company.					
14	Safe Standard Operating Procedure when using the equipment and machine will always be checking and revise as needed.					

WORK ACCIDENT PREVENTION						
No.	Question	Answer				
		Strongly disagree	Disagree	Probably disagree	Agreed	Strongly agreed
1	I believe PT. Ganding Toolsindo already free from work accident case.					
2	First Aid facility is always available when worker got injury or sick while working.					
3	All of employee are responsive to handle others while got injury/accident.					
4	All workers receive regular check-up, in order to minimize workplace accidents.					
5	PT. Ganding Toolsindo already has mechanisms for handling injury and disease in work environment.					
6	When my superior is not available, I know who can be contacted in case of an emergency.					

HUMAN RESOURCES MANAGEMENT						
NO	Question	Answer				
		Strongly disagree	Disagree	Probably disagree	Agreed	Strongly agreed
1	I feel there is a work risk in PT. Ganding Toolsindo.					
2	All of employees already got health insurance.					
3	Reward and punishment from company are applied to all of employees without exception.					

APPENDIX B. RELIABILITY AND VALIDITY TEST

1. Occupational Safety and Health Knowledge

Case Processing Summary		N	%
Cases	Valid	30	100.0
	Excluded ^a	0	.0
	Total	30	100.0

a. Listwise deletion based on all variables in the procedure.

Reliability Statistics

Cronbach's Alpha	N of Items
.893	14

Item-Total Statistics	Scale Mean if Item Deleted	Scale Variance if Item Deleted	Corrected Item-Total Correlation	Cronbach's Alpha if Item Deleted
KKK1 Occupational Safety and Health Knowledge	53.73	20.685	.375	.893
KKK2	53.43	19.771	.401	.893
KKK3	53.00	19.931	.378	.893
KKK4	53.60	20.317	.389	.892
KKK5	53.67	20.161	.414	.892
KKK6	53.60	19.972	.504	.889
KKK7	53.27	19.030	.534	.887
KKK8	53.73	16.616	.881	.869
KKK9	53.80	16.234	.817	.873
KKK10	53.40	18.179	.793	.877
KKK11	53.67	16.299	.698	.883
KKK12	54.70	20.424	.389	.893
KKK13	53.53	17.568	.818	.874
KKK14	53.40	18.317	.648	.882

2. Work accident prevention

Case Processing Summary		N	%
Cases	Valid	30	100.0
	Excluded ^a	0	.0
	Total	30	100.0

a. Listwise deletion based on all variables in the procedure.

Reliability Statistics

Cronbach's Alpha	N of Items
.756	6

Item-Total Statistics	Scale Mean if Item Deleted	Scale Variance if Item Deleted	Corrected Item-Total Correlation	Cronbach's Alpha if Item Deleted
KK1 Work Accident Prevention	18.83	2.695	.680	.663
KK2	19.20	2.166	.643	.698
KK3	18.03	3.344	.436	.736
KK4	17.77	3.840	.449	.747
KK5	17.90	3.886	.400	.753
KK6	17.43	3.082	.583	.698

3. Human Resources Management

Case Processing Summary		N	%
Cases	Valid	30	100.0
	Excluded ^a	0	.0
	Total	30	100.0

a. Listwise deletion based on all variables in the procedure.

Reliability Statistics

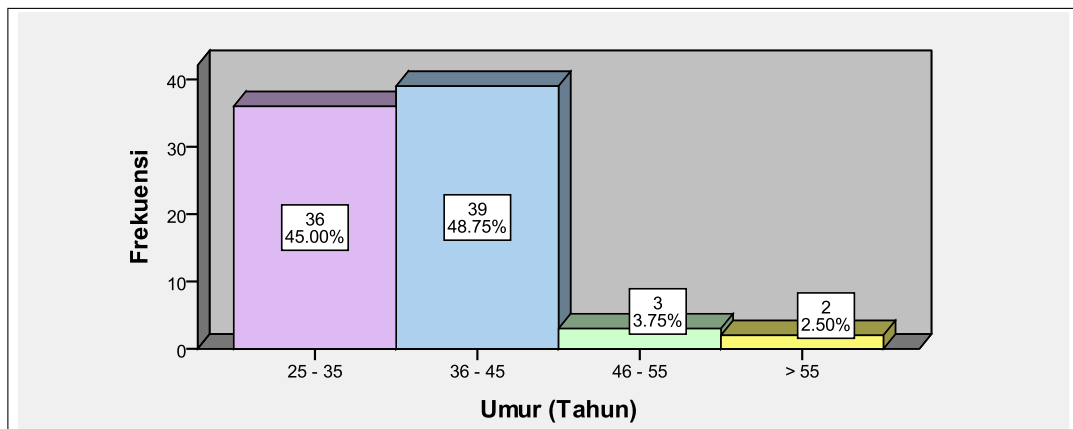
Cronbach's Alpha	N of Items
.739	3

Item-Total Statistics	Scale Mean if Item Deleted	Scale Variance if Item Deleted	Corrected Item-Total Correlation	Cronbach's Alpha if Item Deleted
MSDM1 Human Resources Management	7.17	.833	.606	.607
MSDM2	7.23	.875	.590	.631
MSDM3	8.73	.754	.514	.732

APPENDIX C. DESCRIPTIVE STATISTICS

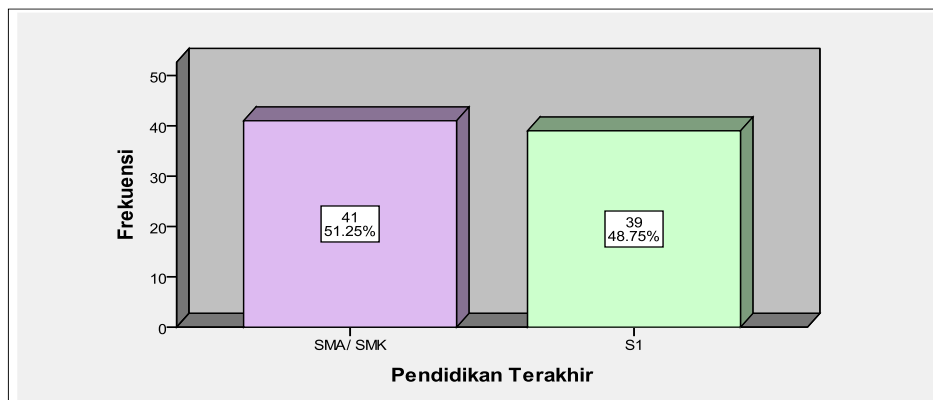
1. Descriptive Statistics for Ages

Age (years old)		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	25 - 35	36	45.00	45.00	45.00
	36 - 45	39	48.75	48.75	93.75
	46 - 55	3	3.75	3.75	97.50
	> 55	2	2.50	2.50	100.00
	Total	80	100.00	100.00	



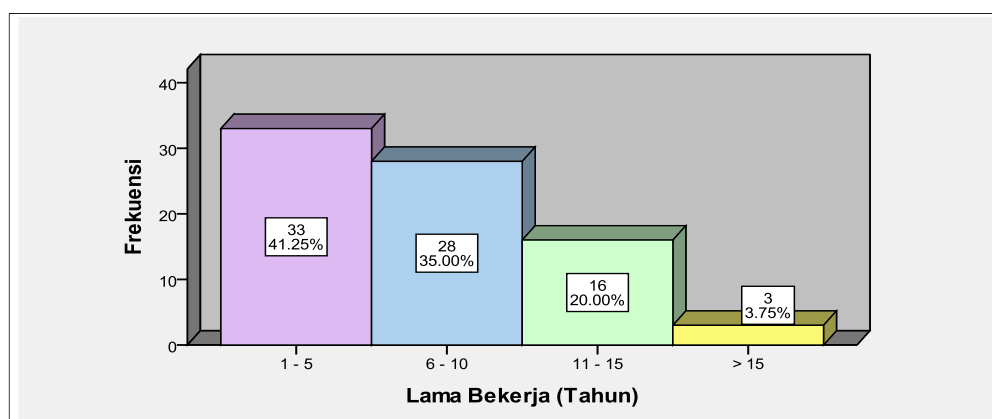
2. Descriptive Statistics for prior education

Prior Education		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	SMA/ SMK	41	51.25	51.25	51.25
	S1	39	48.75	48.75	100.00
	Total	80	100.00	100.00	



3. Descriptive Statistics for work period

Work Period		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1 - 5	33	41.25	41.25	41.25
	6 - 10	28	35.00	35.00	76.25
	11 - 15	16	20.00	20.00	96.25
	> 15	3	3.75	3.75	100.00
	Total	80	100.00	100.00	

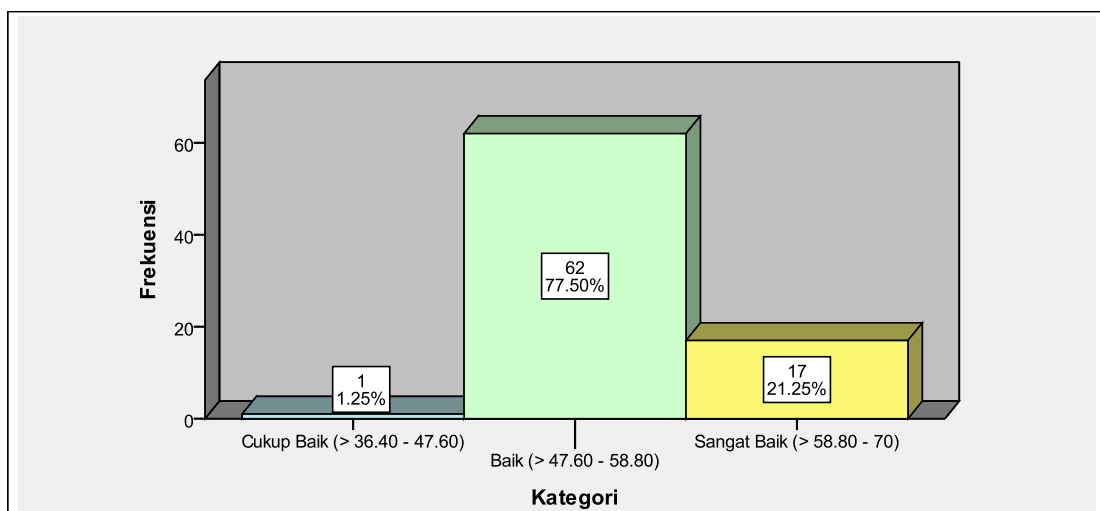


4. Descriptive statistics

Statistics		Occupational Safety and Health Knowledge	Work Accident Prevention	Human Resources Management
N	Valid	80	80	80
	Missing	0	0	0
Mean		54.963	21.450	11.600
Mean Weight		3.926	3.575	3.867
Median		55	21	11
Mode		56	21	11
Std. Deviation		4.817	1.466	1.165
Minimum		47.000	18.000	10.000
Maximum		67.000	26.000	14.000
Sum		4397	1716	928

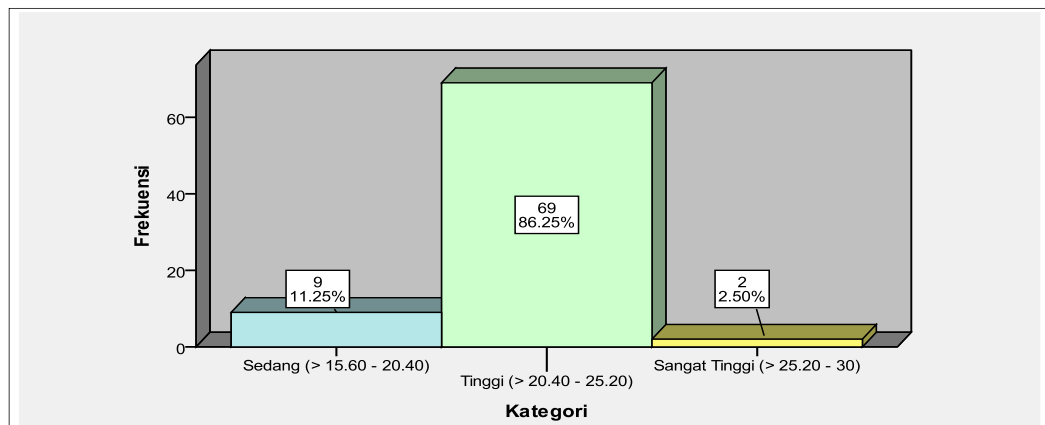
5. Descriptive statistics for Occupational Safety and Health Knowledge

Occupational Safety and Health Knowledge		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Good Enough (> 36.40 - 47.60)	1	1.25	1.25	1.25
	Good (> 47.60 - 58.80)	62	77.50	77.50	78.75
	Very Good (> 58.80 - 70)	17	21.25	21.25	100.00
	Total	80	100.00	100.00	



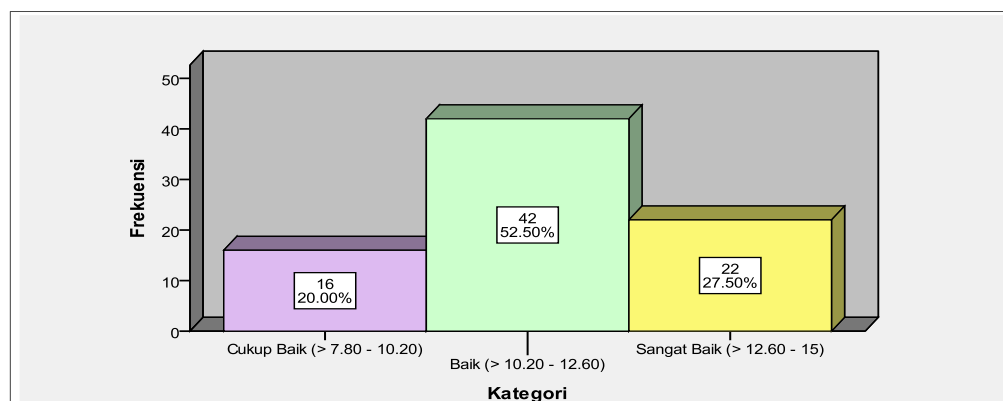
6. Descriptive statistics for work accident prevention

Work Accident Prevention		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Medium (> 15.60 - 20.40)	9	11.25	11.25	11.25
	High (> 20.40 - 25.20)	69	86.25	86.25	97.50
	Very high (> 25.20 - 30)	2	2.50	2.50	100.00
	Total	80	100.00	100.00	



7. Descriptive statistics for Human Resources Management

Human Resources Management		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Good Enough (> 7.80 - 10.20)	16	20.00	20.00	20.00
	Good (> 10.20 - 12.60)	42	52.50	52.50	72.50
	Very Good (> 12.60 - 15)	22	27.50	27.50	100.00
	Total	80	100.00	100.00	



APPENDIX D. CHI-SQUARE

Occupational Safety and Health Knowledge * Work Accident Prevention Crosstabulation			Work Accident Prevention			Total
			Medium	High	Very high	
Occupational Safety and Health Knowledge	Good Enough	Count	0	1	0	1
		% within Occupational Safety and Health Knowledge	.0%	100.0%	.0%	100.0%
		% of Total	.0%	1.3%	.0%	1.3%
	Good	Count	9	53	0	62
		% within Occupational Safety and Health Knowledge	14.5%	85.5%	.0%	100.0%
		% of Total	11.3%	66.3%	.0%	77.5%
	Very Good	Count	0	15	2	17
		% within Occupational Safety and Health Knowledge	.0%	88.2%	11.8%	100.0%
		% of Total	.0%	18.8%	2.5%	21.3%
Total		Count	9	69	2	80
		% within Occupational Safety and Health Knowledge	11.3%	86.3%	2.5%	100.0%
		% of Total	11.3%	86.3%	2.5%	100.0%

Chi-Square Tests	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	10.059 ^a	4	.039
Likelihood Ratio	10.816	4	.029
Linear-by-Linear Association	5.940	1	.015
N of Valid Cases	80		

a. 6 cells (66.7%) have expected count less than 5. The minimum expected count is .03.

Symmetric Measures		Value	Approx. Sig.
Nominal by Nominal	Contingency Coefficient	.334	.039
N of Valid Cases		80	

Human Resources Management * Work Accident Prevention Crosstabulation			Work Accident Prevention			Total
			Medium	High	Very high	
Human Resources Management	Good Enough	Count	1	15	0	16
		% within Human Resources Management	6.3%	93.8%	.0%	100.0%
		% of Total	1.3%	18.8%	.0%	20.0%
	Good	Count	8	34	0	42
		% within Human Resources Management	19.0%	81.0%	.0%	100.0%
		% of Total	10.0%	42.5%	.0%	52.5%
	Very Good	Count	0	20	2	22
		% within Human Resources Management	.0%	90.9%	9.1%	100.0%
		% of Total	.0%	25.0%	2.5%	27.5%
Total		Count	9	69	2	80
		% within Human Resources Management	11.3%	86.3%	2.5%	100.0%
		% of Total	11.3%	86.3%	2.5%	100.0%

Chi-Square Tests	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	10.670 ^a	4	.031
Likelihood Ratio	12.709	4	.013
Linear-by-Linear Association	2.517	1	.113
N of Valid Cases	80		

a. 6 cells (66.7%) have expected count less than 5. The minimum expected count is .40.

Symmetric Measures		Value	Approx. Sig.
Nominal by Nominal	Contingency Coefficient	.343	.031
N of Valid Cases		80	

Occupational Safety and Health Knowledge * Human Resources Management Crosstabulation			Human Resources Management			Total
			Good Enough	Good	Very Good	
Occupational Safety and Health Knowledge	Good Enough	Count	0	1	0	1
		% within Occupational Safety and Health Knowledge	.0%	100.0%	.0%	100.0%
		% of Total	.0%	1.3%	.0%	1.3%
	Good	Count	16	37	9	62
		% within Occupational Safety and Health Knowledge	25.8%	59.7%	14.5%	100.0%
		% of Total	20.0%	46.3%	11.3%	77.5%
	Very Good	Count	0	4	13	17
		% within Occupational Safety and Health Knowledge	.0%	23.5%	76.5%	100.0%
		% of Total	.0%	5.0%	16.3%	21.3%
Total		Count	16	42	22	80
		% within Occupational Safety and Health Knowledge	20.0%	52.5%	27.5%	100.0%
		% of Total	20.0%	52.5%	27.5%	100.0%

Chi-Square Tests	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	27.301 ^a	4	.000
Likelihood Ratio	27.597	4	.000
Linear-by-Linear Association	19.793	1	.000
N of Valid Cases	80		

a. 5 cells (55.6%) have expected count less than 5. The minimum expected count is .20.

Symmetric Measures		Value	Approx. Sig.
Nominal by Nominal	Contingency Coefficient	.504	.000
N of Valid Cases		80	

Age * Occupational Safety and Health Knowledge Crosstabulation			Occupational Safety and Health Knowledge			Total
			Good Enough	Good	Very Good	
Age	25 - 35	Count	1	33	2	36
		% within Age (Tahun)	2.8%	91.7%	5.6%	100.0%
		% of Total	1.3%	41.3%	2.5%	45.0%
	36 - 45	Count	0	27	12	39
		% within Age (Tahun)	.0%	69.2%	30.8%	100.0%
		% of Total	.0%	33.8%	15.0%	48.8%
	46 - 55	Count	0	2	1	3
		% within Age (Tahun)	.0%	66.7%	33.3%	100.0%
		% of Total	.0%	2.5%	1.3%	3.8%
	> 55	Count	0	0	2	2
		% within Age (Tahun)	.0%	.0%	100.0%	100.0%
		% of Total	.0%	.0%	2.5%	2.5%
Total		Count	1	62	17	80
		% within Age (Tahun)	1.3%	77.5%	21.3%	100.0%
		% of Total	1.3%	77.5%	21.3%	100.0%

Chi-Square Tests	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	15.973 ^a	6	.014
Likelihood Ratio	16.595	6	.011
Linear-by-Linear Association	14.050	1	.000
N of Valid Cases	80		

a. 8 cells (66.7%) have expected count less than 5. The minimum expected count is .03.

Symmetric Measures		Value	Approx. Sig.
Nominal by Nominal	Contingency Coefficient	.408	.014
N of Valid Cases		80	

Age * Work Accident Prevention Crosstabulation			Work Accident Prevention			Total
			Medium	High	Very high	
Age	25 - 35	Count	9	27	0	36
		% within Age (Tahun)	25.0%	75.0%	.0%	100.0%
		% of Total	11.3%	33.8%	.0%	45.0%
	36 - 45	Count	0	38	1	39
		% within Age (Tahun)	.0%	97.4%	2.6%	100.0%
		% of Total	.0%	47.5%	1.3%	48.8%
	46 - 55	Count	0	3	0	3
		% within Age (Tahun)	.0%	100.0%	.0%	100.0%
		% of Total	.0%	3.8%	.0%	3.8%
	> 55	Count	0	1	1	2
		% within Age (Tahun)	.0%	50.0%	50.0%	100.0%
		% of Total	.0%	1.3%	1.3%	2.5%
Total		Count	9	69	2	80
		% within Age (Tahun)	11.3%	86.3%	2.5%	100.0%
		% of Total	11.3%	86.3%	2.5%	100.0%

Chi-Square Tests	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	31.490 ^a	6	.000
Likelihood Ratio	21.933	6	.001
Linear-by-Linear Association	14.927	1	.000
N of Valid Cases	80		

a. 10 cells (83.3%) have expected count less than 5. The minimum expected count is .05.

Symmetric Measures		Value	Approx. Sig.
Nominal by Nominal	Contingency Coefficient	.531	.000
N of Valid Cases		80	

Age * Human Resources Management Crosstabulation			Human Resources Management			Total
			Good Enough	Good	Very Good	
Age	25 - 35	Count	9	25	2	36
		% within Age (Tahun)	25.0%	69.4%	5.6%	100.0%
		% of Total	11.3%	31.3%	2.5%	45.0%
	36 - 45	Count	7	16	16	39
		% within Age (Tahun)	17.9%	41.0%	41.0%	100.0%
		% of Total	8.8%	20.0%	20.0%	48.8%
	46 - 55	Count	0	0	3	3
		% within Age (Tahun)	.0%	.0%	100.0%	100.0%
		% of Total	.0%	.0%	3.8%	3.8%
	> 55	Count	0	1	1	2
		% within Age (Tahun)	.0%	50.0%	50.0%	100.0%
		% of Total	.0%	1.3%	1.3%	2.5%
Total		Count	16	42	22	80
		% within Age (Tahun)	20.0%	52.5%	27.5%	100.0%
		% of Total	20.0%	52.5%	27.5%	100.0%

Chi-Square Tests	Value	df	Asymp. Sig. (2- sided)
Pearson Chi-Square	21.057 ^a	6	.002
Likelihood Ratio	23.842	6	.001
Linear-by-Linear Association	11.586	1	.001
N of Valid Cases	80		

a. 6 cells (50.0%) have expected count less than 5. The minimum expected count is .40.

Symmetric Measures		Value	Approx. Sig.
Nominal by Nominal	Contingency Coefficient	.456	.002
N of Valid Cases		80	

Prior Education * Occupational Safety and Health Knowledge Crosstabulation			Occupational Safety and Health Knowledge			Total
			Good Enough	Good	Very Good	
Prior Education	SMA/ SMK	Count	0	39	2	41
		% within Prior Education	.0%	95.1%	4.9%	100.0%
		% of Total	.0%	48.8%	2.5%	51.3%
	S1	Count	1	23	15	39
		% within Prior Education	2.6%	59.0%	38.5%	100.0%
		% of Total	1.3%	28.8%	18.8%	48.8%
Total		Count	1	62	17	80
		% within Prior Education	1.3%	77.5%	21.3%	100.0%
		% of Total	1.3%	77.5%	21.3%	100.0%

Chi-Square Tests	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	15.030 ^a	2	.001
Likelihood Ratio	16.764	2	.000
Linear-by-Linear Association	10.266	1	.001
N of Valid Cases	80		

a. 2 cells (33.3%) have expected count less than 5. The minimum expected count is .49.

Symmetric Measures		Value	Approx. Sig.
Nominal by Nominal	Contingency Coefficient	.398	.001
N of Valid Cases		80	

Prior Education * Work Accident Prevention Crosstabulation			Work Accident Prevention			Total
			Medium	High	Very high	
Prior Education	SMA/ SMK	Count	8	33	0	41
		% within Prior Education	19.5%	80.5%	.0%	100.0%
		% of Total	10.0%	41.3%	.0%	51.3%
	S1	Count	1	36	2	39
		% within Prior Education	2.6%	92.3%	5.1%	100.0%
		% of Total	1.3%	45.0%	2.5%	48.8%
Total		Count	9	69	2	80
		% within Prior Education	11.3%	86.3%	2.5%	100.0%
		% of Total	11.3%	86.3%	2.5%	100.0%

Chi-Square Tests	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	7.530 ^a	2	.023
Likelihood Ratio	9.051	2	.011
Linear-by-Linear Association	7.408	1	.006
N of Valid Cases	80		

a. 4 cells (66.7%) have expected count less than 5. The minimum expected count is .98.

Symmetric Measures		Value	Approx. Sig.
Nominal by Nominal	Contingency Coefficient	.293	.023
N of Valid Cases		80	

Prior Education * Human Resources Management Crosstabulation			Human Resources Management			Total
			Good Enough	Good	Very Good	
Prior Education	SMA/ SMK	Count	12	26	3	41
		% within Prior Education	29.3%	63.4%	7.3%	100.0%
		% of Total	15.0%	32.5%	3.8%	51.3%
	S1	Count	4	16	19	39
		% within Prior Education	10.3%	41.0%	48.7%	100.0%
		% of Total	5.0%	20.0%	23.8%	48.8%
Total		Count	16	42	22	80
		% within Prior Education	20.0%	52.5%	27.5%	100.0%
		% of Total	20.0%	52.5%	27.5%	100.0%

Chi-Square Tests	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	17.979 ^a	2	.000
Likelihood Ratio	19.513	2	.000
Linear-by-Linear Association	15.347	1	.000
N of Valid Cases	80		

a. 0 cells (.0%) have expected count less than 5. The minimum expected count is 7.80.

Symmetric Measures

		Value	Approx. Sig.
Nominal by Nominal	Contingency Coefficient	.428	.000
N of Valid Cases		80	

Work Period * Occupational Safety and Health Knowledge Crosstabulation			Occupational Safety and Health Knowledge			Total
			Good Enough	Good	Very Good	
Work Period	1 – 5	Count	1	31	1	33
		% within Work Period (Tahun)	3.0%	93.9%	3.0%	100.0%
		% of Total	1.3%	38.8%	1.3%	41.3%
	6 - 10	Count	0	22	6	28
		% within Work Period (Tahun)	.0%	78.6%	21.4%	100.0%
		% of Total	.0%	27.5%	7.5%	35.0%
	11 - 15	Count	0	8	8	16
		% within Work Period (Tahun)	.0%	50.0%	50.0%	100.0%
		% of Total	.0%	10.0%	10.0%	20.0%
	16 - 20	Count	0	1	2	3
		% within Work Period (Tahun)	.0%	33.3%	66.7%	100.0%
		% of Total	.0%	1.3%	2.5%	3.8%
Total		Count	1	62	17	80
		% within Work Period (Tahun)	1.3%	77.5%	21.3%	100.0%
		% of Total	1.3%	77.5%	21.3%	100.0%

Chi-Square Tests	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	19.187 ^a	6	.004
Likelihood Ratio	20.072	6	.003
Linear-by-Linear Association	18.093	1	.000
N of Valid Cases	80		

a. 7 cells (58.3%) have expected count less than 5. The minimum expected count is .04.

Symmetric Measures		Value	Approx. Sig.
Nominal by Nominal	Contingency Coefficient	.440	.004
N of Valid Cases		80	

Work Period * Work Accident Prevention Crosstabulation			Work Accident Prevention			Total
			Medium	High	Very high	
Work Period	1 - 5	Count	6	27	0	33
		% within Work Period (Tahun)	18.2%	81.8%	.0%	100.0%
		% of Total	7.5%	33.8%	.0%	41.3%
	6 - 10	Count	3	25	0	28
		% within Work Period (Tahun)	10.7%	89.3%	.0%	100.0%
		% of Total	3.8%	31.3%	.0%	35.0%
	11 - 15	Count	0	15	1	16
		% within Work Period (Tahun)	.0%	93.8%	6.3%	100.0%
		% of Total	.0%	18.8%	1.3%	20.0%
	16 - 20	Count	0	2	1	3
		% within Work Period (Tahun)	.0%	66.7%	33.3%	100.0%
		% of Total	.0%	2.5%	1.3%	3.8%
Total		Count	9	69	2	80
		% within Work Period (Tahun)	11.3%	86.3%	2.5%	100.0%
		% of Total	11.3%	86.3%	2.5%	100.0%

Chi-Square Tests	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	17.730 ^a	6	.007
Likelihood Ratio	12.833	6	.046
Linear-by-Linear Association	8.259	1	.004
N of Valid Cases	80		

a. 9 cells (75.0%) have expected count less than 5. The minimum expected count is .08.

Symmetric Measures		Value	Approx. Sig.
Nominal by Nominal	Contingency Coefficient	.426	.007
N of Valid Cases		80	

Work Period * Human Resources Management Crosstabulation			Human Resources Management			Total
			Good Enough	Good	Very Good	
Work Period	1 - 5	Count	8	23	2	33
		% within Work Period (Tahun)	24.2%	69.7%	6.1%	100.0%
		% of Total	10.0%	28.8%	2.5%	41.3%
	6 - 10	Count	7	12	9	28
		% within Work Period (Tahun)	25.0%	42.9%	32.1%	100.0%
		% of Total	8.8%	15.0%	11.3%	35.0%
	11 - 15	Count	1	6	9	16
		% within Work Period (Tahun)	6.3%	37.5%	56.3%	100.0%
		% of Total	1.3%	7.5%	11.3%	20.0%
	16 - 20	Count	0	1	2	3
		% within Work Period (Tahun)	.0%	33.3%	66.7%	100.0%
		% of Total	.0%	1.3%	2.5%	3.8%
Total		Count	16	42	22	80
		% within Work Period (Tahun)	20.0%	52.5%	27.5%	100.0%
		% of Total	20.0%	52.5%	27.5%	100.0%

Chi-Square Tests	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	18.228 ^a	6	.006
Likelihood Ratio	20.275	6	.002
Linear-by-Linear Association	12.533	1	.000
N of Valid Cases	80		

a. 5 cells (41.7%) have expected count less than 5. The minimum expected count is .60

Symmetric Measures		Value	Approx. Sig.
Nominal by Nominal	Contingency Coefficient	.431	.006
N of Valid Cases		80	