

## Risk Reduction of Unsafe Acts Behaviour in Optics Industry

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Halimahtun S. Yahya<sup>1,\*</sup>, Rasheed M. Kutty<sup>1</sup>

<sup>1</sup> UTM Razak School Of Engineering and Advance Technology Universiti Teknologi Malaysia (UTM), Jalan Sultan Yahya Petra, 54100 Kuala Lumpur, Malaysia

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### ABSTRACT

According to the research of Heinrich, American DunPont and National Safety Council in the United States, etc, more than 80% accidents are caused by the human unsafe behavior. In order to reduce or eliminate the unsafe behavior among workers of Finisar Malaysia focusing in module assemble area. From safety department record of accident result show 61% are due to unsafe act and 39% this data proofing research made by Heinrich. This study will perform at general area in optics industry the walk ways are the higher contribute for unsafe acts incident Analysis will be using Quantitative method and data will collect from survey, record by safety department, and observation. To reduce the risk from descriptive data collected from the result analysis.

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## 1. Introduction

Between a year of 2013 to 2016, there are few incident due to Unsafe Act caused of employee injury. Unsafe Act contribute 61% and 39 % are Unsafe Condition accident in Finisar. The higher number accident reported by safety department due to unsafe act occurred at general issue , Surau and Walk way which contribute to 48% of the accident in Finisar.

The aim of this study is to identify root cause contribute to unsafe act behaviour general in walk way which contribute total 48% of the accident and to further analysis in implementation on control risk on unsafe act behaviour at Finisar Ipoh.

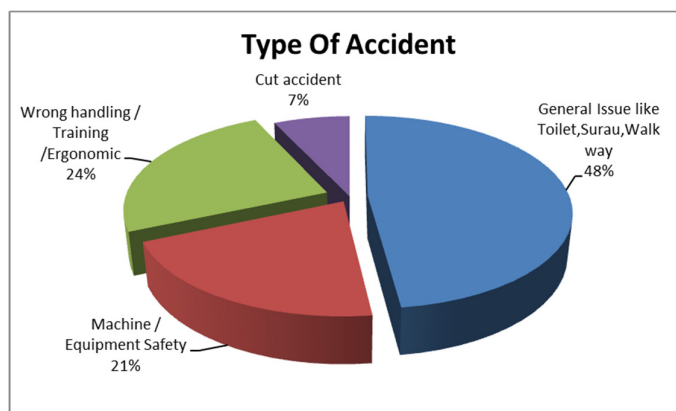
## 2. Methodology

There is three type data collection will be used in the framework. Literature review, perform survey at module assembly area cover all 3 shift refer to sample size table and based on observation at module assemble area and general walk way. There reason to collect data including Interview ,perform survey, and observation to ensure all data cover on pass, real and future potential

\* Corresponding author.

E-mail address: [halimahtuns\\_yahya@yahoo.com](mailto:halimahtuns_yahya@yahoo.com) (Halimahtun S. Yahya)

contribute to unsafe act behaviour. Below timetable show details on how data will be collected. Analysis data by using Quantitative method and using descriptive data Once the root cause being finalize risk reduction will be implementation follow the safety engineering method



**Fig. 1.** Type of accident

## 2.1 Research Goal

The aim of this study is to identify root cause contribute to unsafe act behaviour general in walk way which contribute total 48% of the accident and to further analysis in implementation on control risk on unsafe act behaviour at Finisar Ipoh. There are 3 research objective (RO) can be further details as follow :To Identify the behaviour causing to Unsafe Acts module assemble area, to analyze the potential root cause contribute to Unsafe Acts accident in module assemble area, to reduce risk of unsafe act behaviour in general area walkway.

## 2.2 Data Collection Method and Instrument

This chapter presents and discusses finding from the analysis of the research's result gathered through quantitative questionnaire, in order to be better understanding problems parameter on determining the sub factors lead to unsafe act behaviour, in this chapter will further understand the affected area that need to be focus to insure focusing on correct problematic of unsafe act behaviour Sample size equally distribute to two group of category or employer which is IDL (in direct labor) and DL (direct labor). IDL group of workers not directly involve of producing the product normally executive level from diploma to PHD level and DL group workers direct involve with production which is operators level.

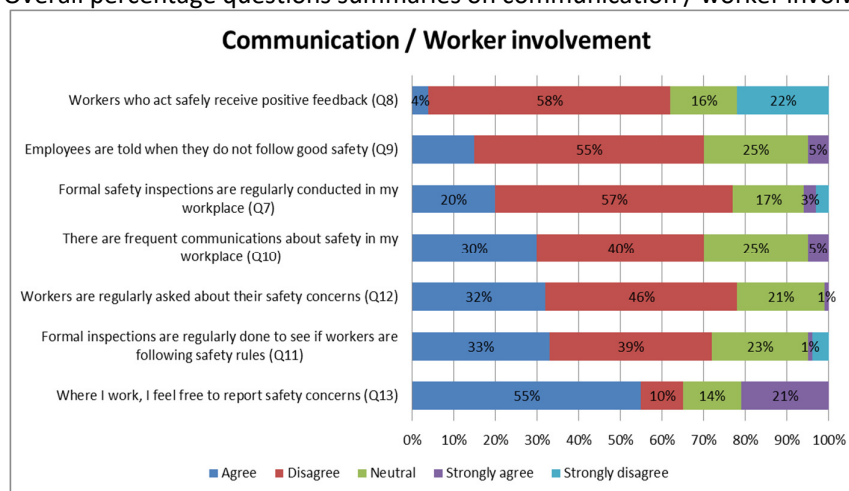
## 3. Results and Analysis

### 3.1 Summaries of Data Analysis on Communication and Worker Involvement

Responded result show 31% disagree and 29% being natural about it. Most of the question having highest disagree result. This show improvement needed for communication and workers involvement to reduce the gap between agrees & disagree result. From the graph we can focus area need to be improving to prevent from focusing wrong factors.

**Table 1**

Overall percentage questions summaries on communication / worker involvement



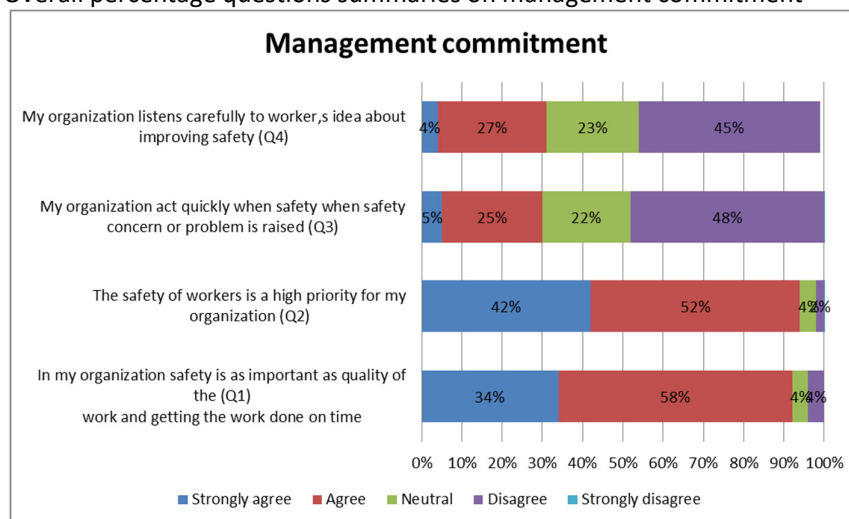
Co-worker behaviour/safety system	Strongly agree	Agree	Neutral	Disagree	Strongly disagree
Qty	15	207	173	188	17
percentage	2.5%	34.5%	28.8%	31.3%	2.8%

### 3.2 Summaries of Data Analysis on Management Commitment

Responded result show overall for below group question 24% disagree and 13.3% being natural about it. Most of the question having highest agreement result total 61.8%. The area need to be focus on question 4 and question 3. By reducing number of neutral and disagree will increase positive agreement.

**Table 2**

Overall percentage questions summaries on management commitment



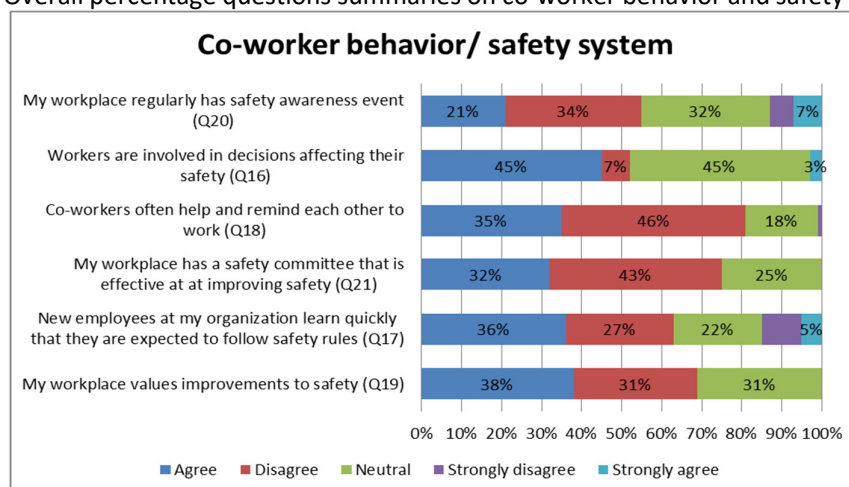
Management commitment	Strongly agree	Agree	Neutral	Disagree	Strongly disagree
Qty	85	162	53	99	1
percentage	21.3%	40.5%	13.3%	24.8%	0.3%

### 3.3 Summaries of Co-worker Behaviour and Safety System

Responded result show overall for below group question 24% disagree and 13.3% being natural about it. Most of the question having highest agreement result total 61.8%. The area need to be focus on question 4 and question 3. By reducing number of neutral and disagree will increase positive agreement.

**Table 3**

Overall percentage questions summaries on co-worker behavior and safety system



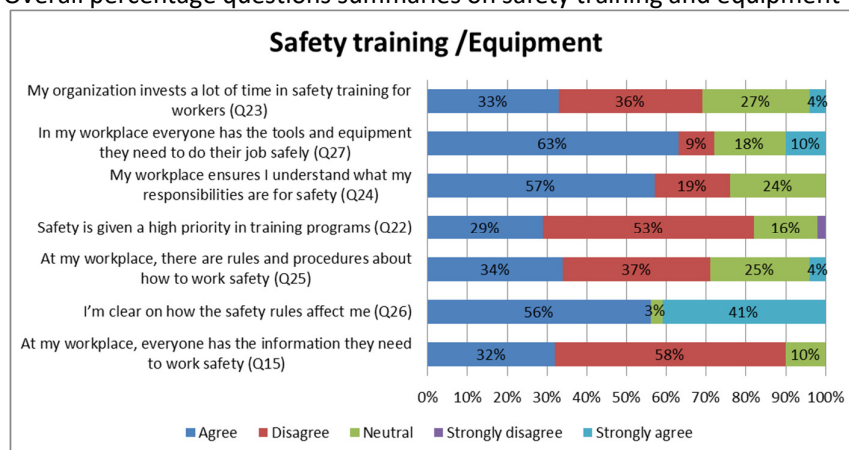
Management commitment	Strongly agree	Agree	Neutral	Disagree	Strongly disagree
Qty	15	207	173	188	17
percentage	2.5%	34.5%	28.8%	31.3%	2.8%

### 3.4 Summaries of Safety Training and Equipment

Responded result show overall for below group question 30.3% disagree and 17.6% being natural about it. Most of the question having highest agreement result total 51.9%. The area need to be focus on question 23, 22, 25 and question 15. By reducing number of neutral and disagree will increase positive agreement. Result show the highest disagree on question 15, this question related on the information provide by origination to work with safety.

**Table 4**

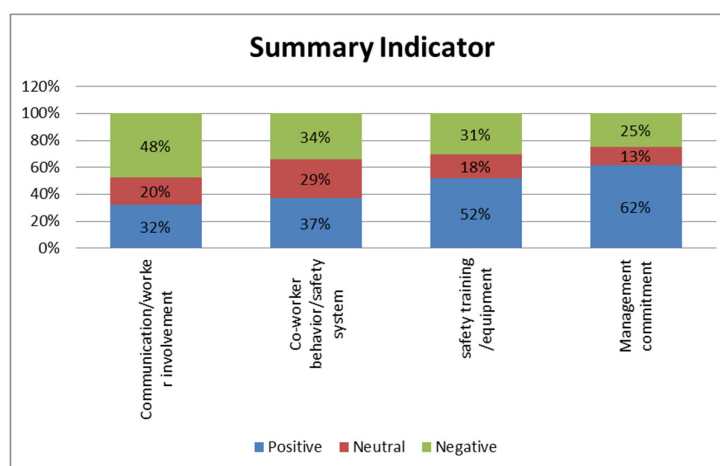
Overall percentage questions summaries on safety training and equipment



Safety training /equipment	Strongly agree	Agree	Neutral	Disagree	Strongly disagree
Qty	59	304	123	212	2
percentage	8.4%	43.4%	17.6%	30.3%	0.3%

### 3.5 Summaries of Indicator

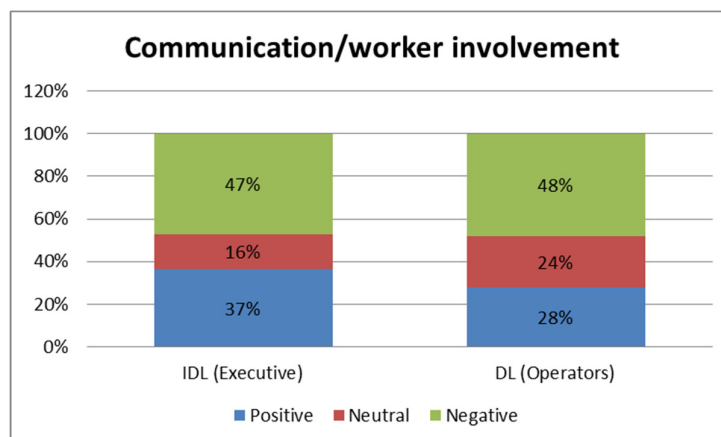
Below is the summary indicator by 4 category, the result indicator categories by positive feedback, neutral feedback and negative feedback by responded. First category communication / workers involvement result show 32% with positive feedback, 20% with neutral feedback and 48% with negative feedback. Second category co-worker / safety system result show 37% with positive feedback, 29% with neutral feedback & 34% with negative result. Third category safety training / equipment responded result show 52% with positive feedback, 18% with neutral feedback and 31% with negative result. Fourth category management commitment responded result was majority with 62% positive feedback, 13% with neutral feedback and 25% with negative feedback. Main area need to be focus communication/ worker involvement and safety co-worker behaviour /safety system.



**Fig. 2.** Overall percentage summaries toward positive, negative and neutral

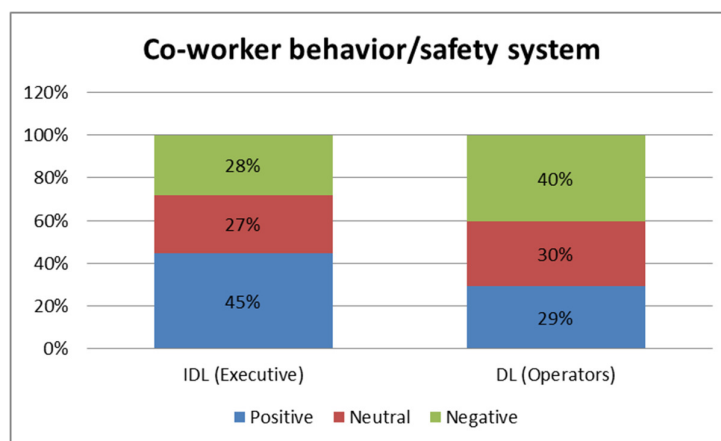
### 3.6 Summaries of Group Category Question toward Group Category

In communication / worker involvement show that focusing of improvement equally for both group IDL & DL, the disagreement not related to education level. Both group give equally negative feedback the differences only 1%. Where 47% responded from IDL level and 48% result from DL.



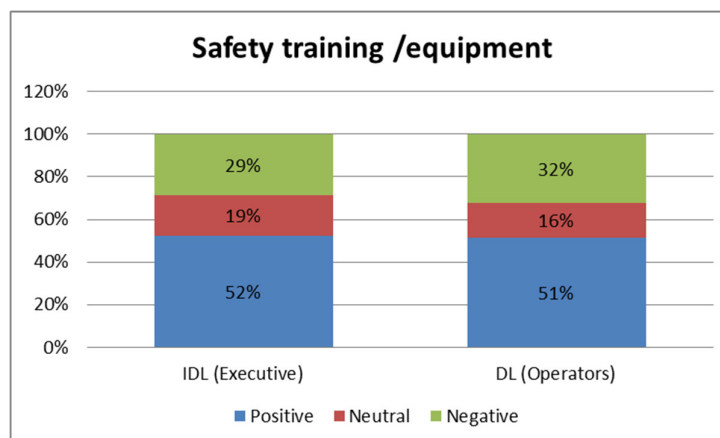
**Fig. 3.** Overall percentage summaries by DL & DL

In co-worker behaviour and safety system result DL was higher negative feedback where carryout 40% and IDL result 28% further study and investigation require to improve negative feedback from DL team.



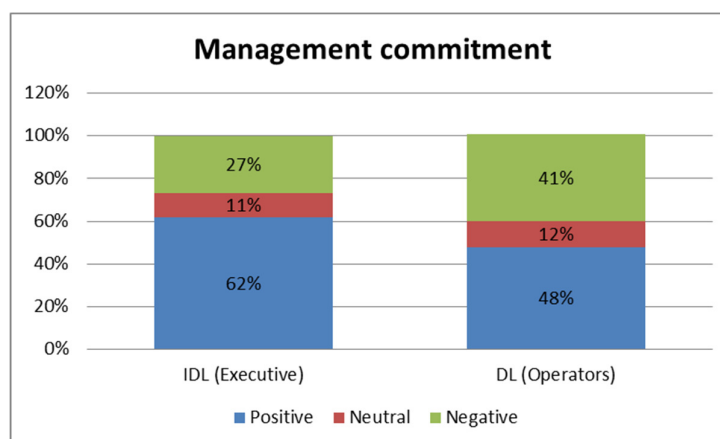
**Fig. 4.** Overall percentage on co-worker behaviour and safety system

In safety training and equipment result show negative feedback IDL was 29% and DL 32% and the difference between these two groups only 3%. For positive feedback both equally agree more than 50%. For neutral feedback from responded result at 19% and 16%.



**Fig. 5.** Overall percentage on safety training towards IDL & DL

In management commitment result show highest different up to 14% on negative feedback where IDL result was 27% and DL level fallout at 40%. For neutral feedback the different at 1% only where IDL at 11% and DL at 12%. Management commitment focusing at IDL group, this need to be change due to 70% of employee coming from DL level.



**Fig. 6.** Overall percentage on management commitment towards IDL & DL

#### 4. Conclusion and Recommendations

In subsequent discussion, the objective of the study will be discuss based on RQ1,RQ2, RQ3 based on result analysis.

*RQ1 : What are the type of behaviour contribute to the unsafe acts*

From accident data, 48% accident due to slip and fall and was happen at general walk way area. Demographic data collected involve with 100 responded workers, result show 100% of workers had run and speed walking and 51% of them involve with daily speed walking at working area. Two main contributions are rushed for output and during scan in when entered the factory with result 40% 38%.

*RQ2 : What is the sub factors that contribute to this failure*

The sub factors divide by 4 category management commitment, co-workers behaviour / safety system communication/ worker involvement, safety training / equipment. Based on responded result including both 4 category show 44% agree with the statement category and 20% being choose neutral about it. Overall negative feedback is 34% for all categories. From the result 54% included negative and neutral feedback this is the area potential improvement in order to reduce RQ3.

#### *RQ3: What can be done on risk reduction of unsafe act behaviour at optics industry*

From the analyzed data the direction of risk reduction can be easily determine. This is importance to ensure focusing on reduction and improvement at the right direction. The data show clearly what the critical item to be focus for example is from the data management commitment result show management less focus at DL level cause 41% disagree with the statement. For this RQ3 recommendation improvement by administration improvement, engineering improvement, safety improvement, training & procedure improvement.

#### *Recommendation*

Recommendation needed to reduce the risk of unsafe act behaviour in optics industry, improvement needed to reduce the risk this will minimize the risk of daily basic task in company by understand what is the factor lead to unsafe act behaviour

#### *Administration Improvement*

Management need to improve the communication between employee & employer. The clear direction need be including for both category. The information should be clear enough and easily to understand.

As per direction of company that quality and safety is equally importance, more lean improvement on safety should be promote to reduce unsafe act behaviour and to promote program of rewarding the workers when practice good safety environment culture, and at the same time reward the cost reduction involve with safety.

#### *Design Improvement*

To change ESD shoes design to non- slip material to prevent from slippery. To further study what are requirement needs of changing the ESD shoes. The longer time workers change the shoes is every 4 year.

Management to further study of concept scan in data entry perform at the production line, from the result survey show 38% from the responded run or speed walking from main entrance to production takes from 3-5 min. Management need to consider on rearrange location of the scan in,(attendance scan) to be more practical and reduce risk of workers running during scan

#### *Training Improvement*

To promote awareness program among workers and to ensure the program is effective enough at the same to continuously study whether program serve the purpose method of objective program. The awareness program should include both categories. By doing this it can increase awareness among workers.



## Safety Improvement

To ensure all workers provide with tool and equipment for them perform daily routing job safely. To perform priority audit towards to ensure workers follow safety procedure. Safety member should perform continuously improvement toward safety, not only workers, equipment and process ensure it friendly user and easier for works to access to prevent from unsafe act behaviour. All the program or improvement should be publish all the workers, management aware of current status.

## Document Improvement

General document or procedure towards safety should be creating and it must be friendly user where easier for the workers to find or access. As per current practice only document related to process, procedure, product, development being documented. The general safety procedure should be created and it can use for all of workers at the same time can use as a training material for new employer

## Limitation of the research

The limitation of the research data of the responded distribute mostly to Malaysian and Indonesian workers is not cover other foreign workers from Myanmar. This is due to language barrier even though questionnaire made in English and Malay still they not understand and contribute to false result.

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