INVESTIGATION OF BEHAVIORAL-BASED SAFETY IMPACTS ON ORGANIZATIONAL SAFETY CULTURE

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submitted by **ULAŞ SEMİH YETİK** in partial fulfillment of the requirements for the degree of **Master of Science** i**n Occupational Health and Safety, Middle East Technical University** by,

Prof. Dr. Halil Kalıpçılar
Dean, Graduate School of **Natural and Applied Sciences** _____

Prof. Dr. Mahmut Parlaktuna
Head of Department, **Occupational Health and Safety** _____

Prof. Dr. Mahmut Parlaktuna
Supervisor, **Petroleum and Natural Gas Eng., METU** _____

Dr. Murat Can Ocaktan
Co-Supervisor, **Occupational Health and Safety, METU** _____

Examining Committee Members:

Prof. Dr. Nuray Demirel
Mining Engineering, METU _____

Prof. Dr. Mahmut Parlaktuna
Petroleum and Natural Gas Engineering, METU _____

Assoc. Prof Dr. Gülbiye Yenimahalleli Yaşar
Faculty of Health Sciences, Ankara Uni. _____

Date:29.01.2020

I hereby declare that all information in this document has been obtained and presented in accordance with academic rules and ethical conduct. I also declare that, as required by these rules and conduct, I have fully cited and referenced all material and results that are not original to this work.

Name, Last name : Ulaş Semih Yetik

Signature :

ABSTRACT

INVESTIGATION OF BEHAVIORAL-BASED SAFETY IMPACTS ON ORGANIZATIONAL SAFETY CULTURE

Yetik, Ulaş Semih
Master of Science, Occupational Health and Safety
Supervisor : Prof. Dr. Mahmut Parlaktuna
Co-Supervisor: Dr. Murat Can Ocaktan

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The overall aim of this study is to examine the effects of implementing behavior based safety management approach on the safety culture of the organization. In accordance with this aim, the main objectives of this study are to evaluate and compare the safety culture maturity level of two companies serving in the same industry (defense industry) and having the same service areas. With this comparison, it is also aimed to show the difference between companies which one using the behavior-based safety concept since 2009 and other using traditional safety programs. The research methodology had three parts. The first one was a development of the safety culture maturity questionnaire through focus group interviews with workers, workshop with safety specialists and expert consultation sessions. To decide the dimensions and the aspects of the questionnaire, original Manchester Patient Safety Framework was used as a basis and final version of the questionnaire designed with 25-aspects under 9-dimensions. The second part of the study was application of the questionnaire and data collection. Total of 358 workers from the company, which uses the behavior-based safety approach, and 248 workers from the company, which uses the traditional safety approach, filled out the questionnaire. The third and final part of the study was assessing the results and

comparing the results of these two companies. The results showed that the safety culture maturity level of the company, which uses the behavior-based safety approach, is higher level in each aspect compared to the company which mainly uses the traditional safety approach.

Keywords: Safety Culture, Behavior-Based Safety

ÖZ

DAVRANIŞ ODAKLI GÜVENLİK YÖNETİMİNİN ORGANİZASYONEL GÜVENLİK KÜLTÜRÜ ÜZERİNE ETKİLERİNİN ARAŞTIRILMASI

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Ortak Tez Yöneticisi: Dr Murat Can Ocaktan

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Bu çalışmanın genel amacı, davranış odaklı güvenlik yönetiminin organizasyonların güvenlik kültürü üzerindeki etkilerini incelemektir. Bu amaç doğrultusunda, bu çalışmanın temel gayesi aynı sanayide (savunma sanayi) hizmet veren ve aynı hizmet alanlarına sahip iki şirketin güvenlik kültürü olgunluk düzeyini değerlendirmek ve karşılaştırmaktır. Bu karşılaştırmayla, 2009 yılından bu yana davranış odaklı güvenlik yönetimi uygulayan şirket ile geleneksel güvenlik programlarını kullanan şirket arasındaki farkın da gösterilmesi hedeflenmektedir. Araştırma yönteminin üç ana bölümü vardır. Birinci bölüm, işçilerle odak grup görüşmeleri, iş güvenliği uzmanları ve uzman danışmanlar ile çalışma grupları yoluyla güvenlik kültürü olgunluk anketinin geliştirilmesidir. Anketin boyutlarına ve alt boyutlarına karar vermek için, orijinal Manchester Hasta Güvenliği Çerçevesi ("Manchester Patient Safety Framework") temel alınmış ve anketin son hali 9 boyutun altında 25 alt boyut şeklinde tasarlanmıştır. Çalışmanın ikinci bölümü anket uygulaması ve veri toplama adımlarını içermektedir. Bu bölümde, davranış odaklı güvenlik yönetimi uygulayan şirketten toplam 358 işçi ve geleneksel güvenlik yaklaşımını kullanan şirketten ise toplam 248 işçi anketi doldurmuştur. Çalışmanın üçüncü ve son bölümü, anketin sonuçlarını değerlendirmekte ve iki şirketin sonuçlarını karşılaştırmaktır. Sonuçlar,

davranış odaklı güvenlik yönetimini uygulayan şirketin güvenlik kültürü olgunluk düzeyinin, esas olarak geleneksel güvenlik yaklaşımını kullanan şirkete kıyasla her alt boyutta daha yüksek seviyede yer aldığını göstermiştir.

Anahtar Kelimeler: Güvenlik Kültürü, Davranış Odaklı Güvenlik

To İDİL

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İdil; the light of my life, the reason why I stay strong, and the owner of the smile whose echoes make all the worries in the world disappear, you are the most beautiful child on this Earth.

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CHAPTER 1

INTRODUCTION

1.1. Background

The International Labour Organisation (herein after called as ILO) is an organization that deals directly with the occupational health and safety (OHS) concept and works to set the principles related to workers' health and safety at the workplaces. ILO publishes some standards with the approach that workers must be protected from any kind of injury, sickness or disease arising from their employment conditions. ILO states that even though they publish numerous standards related to OHS and try to improve working conditions of the workers, still, for millions of workers the reality is very different.

According to ILO global work-related death estimation in 2018, 2.78 million work-related deaths are occurring each year and from that ratio, the 2.4 million are related to occupational diseases. In addition to the tremendous suffering faced by workers and their families, the economic costs associated with accidents are enormous for businesses, countries and the world. Compensation, lost workdays, losses pausing production and trainings, and health care costs represent approximately 3.94 percent of annual gross domestic product (GDP) of the world. ILO argues that most of these tragedies can be prevented by meaningful prevention, reporting and auditing practices. According to ILO;

> *"Occupational health and safety is generally defined as the science of the anticipation, recognition, evaluation and control of hazards arising in or from the workplace that could impair the health and well-being of workers, taking into account the possible impact on the surrounding communities and the general environment." (Alli, 2008)*

The 19th century and the first half of the 20th century were periods of rapid economic, technical, and social change. During these periods, there were movements related to the ongoing mechanization and cost-effectiveness of production. As a result, there has been an increase in the deaths of workers. The occupational safety has started to develop in a professional field. At the beginning of the 20th century, there were two hypotheses that dominated the occupational safety field. The individual and environmental hypothesis reflected the debate on heredity and the environment. The accident proneness theory (Greenwood and Woods, 1919) is an example of an individual hypothesis that explains accidents as a result of individual tendencies. On the other hand, the environmental hypothesis explores the external causes of the accidents, such as workload (doing the job fast), unsafe machinery or long working hours. (Swuste *et al*., 2010).

The academic literature is full of studies which try to find out the reasons behind the incidents and what can be done to prevent them. In order to prevent an accident, the underlying causes must be understood correctly and completely. In this respect, there are many studies conducted and available literature, in which these studies reveal the causes of accidents in order to find effective prevention methods. One of the most known studies related to the reason of the accidents is the "Domino Theory" of Heinrich.

W. H. Heinrich (1931), who is the founder of the domino theory, concluded from his study that: 88% of all accidents were caused by unsafe acts of people (unsafe behavior), 10% by unsafe/inappropriate working conditions (unsafe conditions), and 2% by "acts of God" (unpreventable) (ILO; Jasiulewicz-Kaczmarek *et al*., 2015; Guo *et al*., 2018). For most of the researchers in the academic field, this study of Heinrich led to discussions about the human behavior and its contributions to the accidents, for this point of view it can be considered as origin of the behavior based safety (BBS), although it is difficult to point out the origin of it.

Understanding the role and importance of safety behavior in the prevention of accidents, the BBS has attracted great attention since the 1970s. BBS does not have

an accepted definition but is often seen as an all-encompassing term for various safety interventions that highlight employee safety behavior (Guo *et al*., 2018).

In their paper, Jasiulewicz-Kaczmarek *et al.* (2015), explained BBS term as: Behavior Based Safety is a term used to describe the prevention of accidents, injuries, and loss in the workplace. BBS safety involves the practical application of safety procedures based on the real-world behaviors of employees in work situations (Jasiulewicz-Kaczmarek *et al*., 2015).

The authors conducted literature review related to the definition of the BBS, techniques of the BBS and application of BBS in enterprises. According to the authors, in BBS, everyone is responsible for the safety of others as well as for their own safety. Insecure behavior can cause accidents and injuries. Identifying issues related to workplace safety allows companies to evaluate problematic areas and establish BBS standards. Behavioral change is not about changing the person but changing people's perceptions related to accidents and the work environment. The primary techniques in BBS include observation and feedback, training and behavior-based incentives, demands and goal setting (Jasiulewicz-Kaczmarek *et al*., 2015).

During the period that researchers focused on the reason of the accidents, with the Chernobyl accident in 1986, International Nuclear Safety Advisory Group (INSAG) presented another concept called "safety culture". INSAG introduced the concept of safety culture to the literature in the "Summary Report on the Post-Accident Review Meeting on the Chernobyl Accident", which was published by the International Atomic Energy Agency (IAEA) in 1986 (IAEA, 1986). IAEA stated in the summary report that one of the reasons of the Chernobyl catastrophe was the existing poor safety culture in nuclear power plants in the Soviet Union at that time. Again, the report was produced in order to identify the reason behind the Chernobyl accident and this new concept "safety culture" is considered to be one of the reasons. However, the definition of this concept was not given in this report. Because there were many debates which emerged in the aftermath of the publication of this report related to the definition of the safety culture, INSAG published another report on

Safety Culture in 1991 as a part of the safety series reports (INSAG, 1991). One of the first definitions of safety culture can be found in this report as follows:

> *"Safety Culture is that assembly of characteristics and attitudes in organizations and individuals which establishes that, as an overriding priority, nuclear plant safety issues receive the attention warranted by their significance" (International Atomic Energy Agency, 1991).*

With this definition, INSAG enables the definition of the safety culture to include both organizational and individual attitudes, which obviously both have a role in adding to the accident.

After the concept of safety culture started to be discussed in the literature, there were numerous studies conducted to measure safety culture of the organization (both qualitative and quantitative studies). With this growing attention towards the assessment of the safety culture level of the organization, the safety culture maturity model, one of the bases of this thesis study, comes up as a tool of assessment of safety culture.

One of the earliest models which was used as a foundation of the safety culture matrix is the Organization Culture Typology of Westrum. Westrum (1993) designed a model to identify the typical patterns (levels) of the organizational culture and presented this model in his article in 1993. The author identified three typical levels of organizational culture. The three levels identified in Westrum's model are named as pathological, bureaucratic, and generative. The pathological level is defined as power-oriented, bureaucratic level is defined as rule-oriented and final level called generative is defined as performance-oriented. For his model, Westrum stated that "A generative culture will make the best use of its assets, a pathological one will not." (Westrum, 1993).

After the Westrum model (1993), two additional levels named reactive and proactive, were initially proposed by Reason in his book called "Managing the Risks

of Organizational Accidents" and published in 1997 as extensions of Westrum's original typology (Reason, 1997; Parker *et al*., 2006).

After that, various approaches were presented in the literature. Hudson developed a new model by adding two levels to Westrum's model and renaming the bureaucratic level calculative (Hudson, 2003).

Manchester Patient Safety Framework (MaPSaF), which is the main framework used in the present study, is developed by The University of Manchester. MaPSaF was initially developed by a group of scientists (Parker *et al.*) in a joint project: This project was supported by the National Primary Care Research and Development Centre, University of Manchester and funded by Shell International.

MaPSaF was developed based on Parker and Hudson's (2001) application of Westrum's (1993) stage model of organizational culture maturity. The safety culture levels in the MaPSaF are pathological, reactive, bureaucratic, proactive, and generative. According to MaPSaF, maturity increases from pathological to generative (MaPSaF, 2006).

The details related to Westrum's original model and the other models are defined in the literature review section of this thesis. The reason why MaPSaF was used in the present study is because it clearly presents the dimensions of the safety culture and the detailed expansions given for each dimension based on the maturity levels.

1.2. Objectives and Scope of the Study

The main objectives of this study are to assess the safety culture maturity levels of the two companies, whose service areas are the same, and to compare these levels, and also with this comparison to show the difference between which one of the companies is using Behavior Based Safety concept since 2009, and which one is mainly using traditional safety programs.

The main elements of this study are: (i) to asses safety culture maturity levels of the companies; (ii) to investigate the effectiveness of BBS programs and traditional

safety programs; (iii) to find out the impacts of these two different programs on workers to develop a safety culture concept; and (iv) to discover whether there is a positive relationship between the BBS programs and safety culture maturity level of the company.

As mentioned in section 1.1, BBS is one of the subjects that draws attention since Heinrich's work in 1931. In Turkey, there are not many enterprises that use BBS approach in order to improve their safety and to prevent work-related incidents. Most of the companies are still in the reactive phase, which is taking actions after an incident happens and dealing with the safety issues with temporary solutions. With this study, it will be possible to show how BBS approach can be used in the Turkish industry, and its effectiveness.

1.3. Research Methodology

The research methodology has three main parts. The first one is a development of the safety culture maturity questionnaire. As the first part of the study is the basis of the whole study, it has been completed carefully and with the help of experienced experts in the necessary steps. The steps of the first part of the study are:

- Determination of the safety culture dimensions based on MaPSaF
- Development of the interview questions
- Focus group interviews with workers
- Determination of the aspects based on the literature review and interviews with workers by workshop with 2 health and safety specialists
- Development of the safety culture maturity questionnaire
- Expert consultation sessions
- Changes in the questionnaire based on the expert consultation

After the questionnaire was formulated, METU Human Subjects Ethic Committee approval was received from the Applied Ethics Research Centre of Middle East Technical University (Appendix C).

The second part of the study is application of the questionnaire in both companies and data collection. In this part, total of 358 workers from Company A and total of 248 workers from Company B filled out the questionnaire.

The third and the final part of the study is assessing the results of the questionnaire and comparing the results of the two companies. With this part, it is intended to show the differences between two companies and to reveal whether there is a connection between these differences and the BBS approach.

1.4. Expected Contributions of the Study

Although there are many safety culture assessment studies found in the literature, it is hard to see one conducted in the defense industry. Defense industry companies are the most conservative companies in the sector, especially for security reasons. For that reason, this study is the first one that includes two companies from defense industry and also it has a very high participation, approximately 600 workers.

The development of the safety culture maturity questionnaire part of this study can be considered to be a separate study in itself. To best of our knowledge, there is no safety culture maturity matrix (maturity questionnaire in this present study) produced for the defense industry with the use of MaPSaF (2006).

This study can be qualified as a pioneer among other safety culture studies in Turkey thanks to its uniqueness of the industry in which the study was conducted, the high participation number, and the detailed safety culture maturity questionnaire formulation part.

1.5. Outline of the Thesis

This thesis consists of six subsequent chapters. Following the introductory chapter, Chapter 1, which gives background information about the thesis, its objectives and scope of the study and information about the methodology and outline; comprehensive literature review on safety culture, safety culture maturity model and

BBS is presented in Chapter 2. After that, Chapter 3 presents the stages of the development of safety culture maturity questionnaire and final version of questionnaire. Chapter 4 includes the details related to implementation stage of the questionnaire. Demographic details of the participants are demonstrated in this chapter and the information related to the companies (workers numbers, services *etc*.) are also given in this chapter. Chapter 5 presents the results of the data obtained from the questionnaire and the comparison of the two companies. Finally, the main conclusions from the study and recommendations related to the results are presented in Chapter 6. The details of the studies carried out in each stage are explained in the relevant chapters of this thesis.

CHAPTER 2

LITERATURE REVIEW

2.1. Safety Culture Concept

As referred in Chapter 1, safety culture is a concept that emerged after the Chernobyl accident. However, most of the researchers claim that safety culture is directly related to organizational culture, which is a very earlier concept compared to the safety culture. In fact, Guldenmund (2000) stated in his review study that safety culture and safety climate studies that do not refer to the organizational climate and culture concepts will be incomplete (Guldenmund, 2000).

In the course of this thesis study, the details related to organizational culture and climate concepts are not presented, however, as an introduction, brief explanation about these concepts are given.

Frazier quoted Clarke's approach related to safety culture in his paper, and that was: "Safety culture is one of many within an overall organizational culture". (Frazier *et al.*, 2013). This approach is also common for most of the scientists. This perspective is accepted by many scientists and safety culture is seen as a part of the organizational culture.

The organizational culture concept was widely studied by Edgar H. Schein (2004). He is a scientist that focuses on organizational culture, organization development, and organizational psychology. He is the author of the book "Organizational Culture and Leadership", which is one of the main studies that focuses on the concepts of culture, group culture, organizational culture, and leadership (Schein, 2004). One of the quotes that many researchers used for the organizational culture comes from this book and it is the simplest way of defining the organizational culture as "the way we do things around here" (Schein, 2004).

Cooper (2000) defined organizational culture as “Organizational culture is a concept often used to describe shared corporate values that affect and influence members' attitudes and behaviors” (Cooper, 2000). Further he defined safety culture as “Safety culture is a sub-facet of organizational culture, which is thought to affect members' attitudes and behavior in relation to an organization’s ongoing health and safety performance” (Cooper, 2000). As Cooper (2000), Kennedy and Kirwan (1998) also defined safety culture as “a sub-element of the overall organizational culture” (Kennedy and Kirwan, 1998).

As stated in Chapter 1, one of the first definitions of safety culture came from International Atomic Energy Agency in 1991. In literature, various definitions of safety culture can be found. Dr. Frank W. Guldenmund (2000) published the article “The Nature of Safety Culture: A Review of Theory and Research” in 2000 and listed 18 safety culture and climate definitions from the literature.

The author claimed that one of the earliest definitions came from Zohar in 1980, which is actually the definition of the safety climate, and it was “A summary of molar perceptions that employees share about”. Another important definition comes from Cox and Cox in 1991 as “safety cultures reflect the attitudes, beliefs, perceptions, and values that employees share in relation to safety their work environments” (Guldenmund, 2000).

One of the most used and detailed definitions of safety culture is the one that was presented by the Health and Safety Executive of the United Kingdom and derived from the IAEA, which is:

> *“The safety culture of an organization is the product of individual and group values, attitudes, perceptions, competencies and patterns of behavior that determine the commitment to, and the style and proficiency of, an organization's health and safety management. Organizations with a positive safety culture are characterized by communications founded on mutual trust, by shared*

> *perceptions of the importance of safety and by confidence in the efficacy of preventive measures"* (HSE, 1993 as cited in Cooper, 2000; Gadd and Collins, 2002; Frazier et al., 2013).

Another detailed definition came from Lee in 1996: "the safety culture of an organization is the product of individual and group values, attitudes, perceptions, competencies, and patterns of behavior that determine the commitment to, and the style and proficiency of, and organization's health and safety management" (Guldenmund, 2000).

Lee and Harrison (2000) gave the definition of safety culture as "the values, attitudes, beliefs, risk-perceptions and behaviors as they relate to employee safety" in their safety culture assessment study in nuclear power stations (Lee and Harrison, 2000).

Douglas Wiegmann (2002) also reviewed safety culture literature in 2002 and tried to find out the similarities between the safety culture definitions in the literature. Like Cooper, he also listed 13 definitions of safety culture from the literature. After he investigated the similarities between the definitions, he articulated the safety detailed culture definition in his article as:

> *"Safety culture is the enduring value and priority placed on worker and public safety by everyone in every group at every level of an organization. It refers to the extent to which individuals and groups will commit to personal responsibility for safety, act to preserve, enhance and communicate safety concerns, strive to actively learn, adapt and modify (both individual and organizational) behavior based on lessons learned from mistakes, and be rewarded in a manner consistent with these values"* (Wiegmann et al., 2002).

Consequently, although there is not a single definition of safety culture, behaviors, approaches, values, priorities, perceptions, norm, and attitudes (both as a group or as an individual), the common concepts included in all the definitions are mentioned above.

2.2. Safety Culture Maturity Model

As stated in Chapter 1, one of the earliest models which was used as a foundation of the safety culture matrix is the Organization Culture Typology of Westrum, which was presented in 1993 in his article named "Cultures with Requisite Imagination". In his paper, Westrum argues that there must be a conscious culture of inquiry for the safety of large systems. That is, the organization has to motivate individuals and groups within the organization to observe, question and think about the results and to bring them to the attention of senior management when they realize that observations are related to important aspects of the system. The organization should encourage thinking and clear presentation of these thoughts so that decisions can be made with the full recognition of what the results may be (Westrum, 1993).

With this point of view, Westrum presented three classes related to how organizations treat information. The original classes of Westrum and their explanations related to information flow are given in Table 2.1.

Table 2.1. Westrum's Three Classes of Organization (Westrum, 1993)

Pathological	Bureaucratic	Generative
Don't want to know	May not find out	Actively seek information
Messengers are shot	Listened if they arrive	Messengers are trained
Responsibility is shirked	Responsibility is compartmentalized	Responsibility is shared
Bridging is discouraged	Allowed but neglected	Bridging is rewarded
Failure is punished or covered up	Organization is just and merciful	Inquiry and redirection
New ideas are actively crushed	New ideas present problems	New ideas are welcomed

After a period, Westrum published another article called "A Typology of Organizational Cultures" in 2004. He stated in his article that "the most critical issue for organizational safety is the flow of information". With this point of view, he

emphasizes that failures in the flow of information are evident in many major accidents, and the flow of information is also a decisive factor for organizational culture. In some organizations, information flows well and responds quickly and appropriately. In others, it is stacked for political reasons or stops because of bureaucratic obstacles (Westrum, 2004).

Westrum suggests three typical patterns; the first is to engage in personal power, needs and grandeur. Second, there is a preoccupation with regard to rules, positions and departmental issues. The third is to concentrate on the task itself rather than on individuals or positions. The typology of Westrum is presented in Table 2.2.

Table 2.2. Westrum's Organizational Culture Typology (Westrum, 2004)

Pathological	Bureaucratic	Generative
Power oriented	**Rule oriented**	**Performance oriented**
Low cooperation	Modest cooperation	High cooperation
Messengers shot	Messengers neglected	Messengers trained
Responsibilities shirked	Narrow responsibilities	Risks are shared
Bridging discouraged	Bridging tolerated	Bridging encouraged
Failure→	Failure→	Failure→
Scapegoating	Justice	Inquiry
Novelty crushed	Novelty→ problems	Novelty implemented

According to Westrum, the scheme focuses on the information flow as the key variable. The information flow includes not only how much information is transmitted from one point to another, but also the promptitude of the information, the accuracy of its time, and its suitability to the receiver. Generative organizations transmit the necessary information to the right person and in the right time frame. Hence, generative organizations tend to be proactive in delivering information to the right people in every way necessary (Westrum, 2004).

James Reason, professor of psychology, then introduced the concepts of reactive and proactive, which could be considered in addition to Westrum's model. He illustrated stages of organizational accidents in his book in 1997. The illustration shows the three-levels of organizational accidents, which are the person, the workplace and the organization in Figure 2.1.

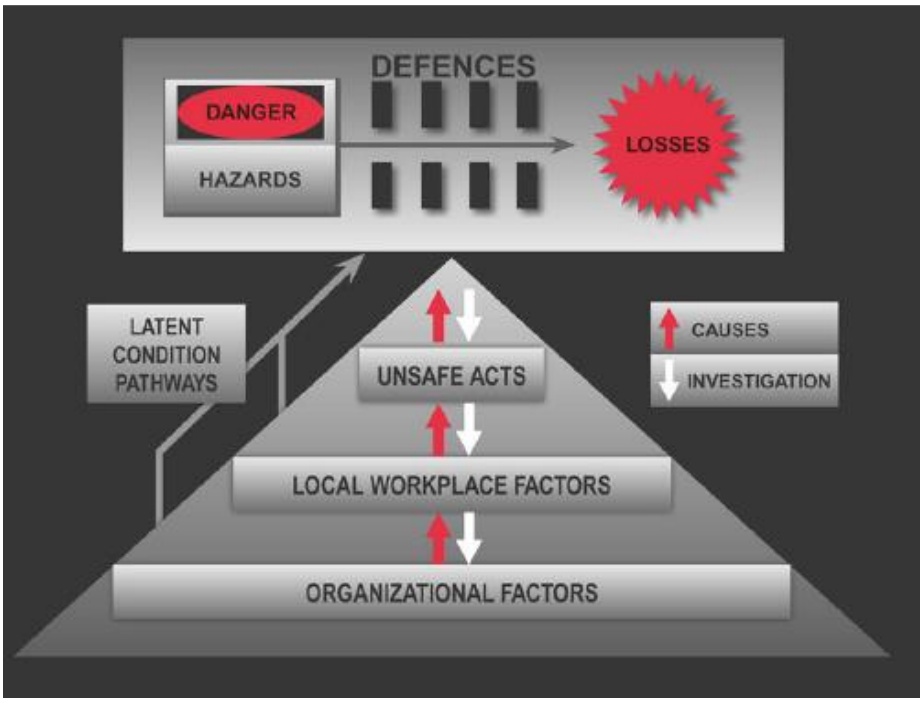


Figure 2.1. Reason's Stages for the development and investigation of an organizational accident (Reason, 1997)

Reason explained this illustration as follows: The rectangular block seen at the top represents the main elements of an event, while the below triangular shape represents the system that produces it. This has three levels: the person (unsafe acts), the workplace (the conditions that cause the error), and the organization. The white downward arrows indicate the investigation steps and black upward arrows indicate the causality direction (Reason, 1997).

For Reason, the only goal achievable for safety management is not zero accidents, but reaching the point where safety reaches maximum resistance and stays there. It is not difficult to move in the direction of safety; however, it is difficult to maintain this position. To maintain such a position, "navigational aids" are required. He

explained navigational aids in two main categories as “reactive outcome measures” and “proactive process measures”. Reactive measures can be applied after an event occurs, but proactive measures can be used to assess the safety of the system as a whole before any event occurs and the use of both of these measures is necessary for effective safety management (Reason, 1997).

Reason’s accident causality model presented in Figure 2.1 draws attention to two important subjects: local and organizational factors that lead to unsafe acts and the barriers, safeguards and defenses that prevent hazards and losses. To further understand Reason’s approach to reactive and proactive measures, interaction between them based on these two important subjects is given in Table 2.3.

Table 2.3. Interaction between reactive and proactive measures (Reason, 1997)

	Reactive Measures	Proactive measures
Local and organizational conditions	Analysis of many incidents can reveal recurrent patterns of cause and effect.	Identify those conditions most needing correction, leading to steady gains in resistance or ‘fitness’.
Defences, barriers and safeguards	Each event shows a partial or complete trajectory through the defences.	Regular checks reveal where holes exist now and where they are most likely to appear next.

Many versions of the maturity model presented in the literature take Westrum’s and Reason’s approach as their basis. Although the theory behind the models is generally the same, studies sometimes exhibit changes in the names and numbers of the levels. Hudson presented safety culture maturity model in his article that focuses on good safety performance of the high-risk industries such as aviation and oil and gas. The model was created by adding Reason's reactive and proactive approach to Westrum's 3-level model (Figure 2.2). But Hudson changed the name of the bureaucratic level to calculative, explaining that it would be easier for people to classify themselves as calculative rather than bureaucratic (Hudson 2001 and 2003).

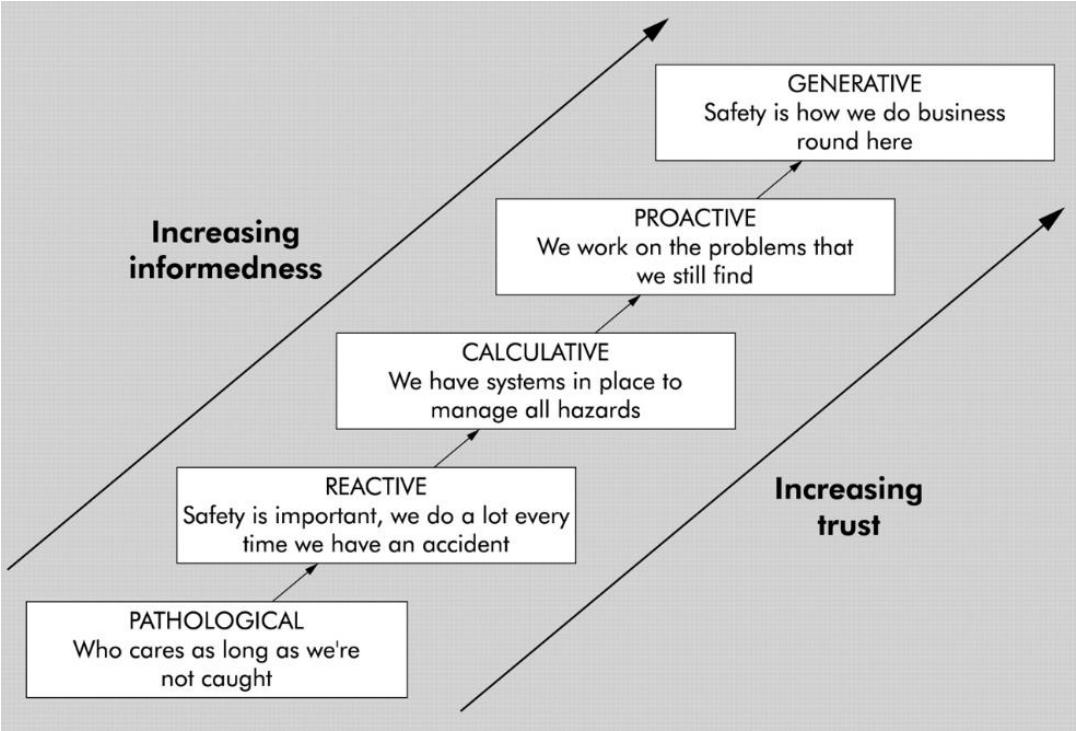


Figure 2.2. Hudson's Cultural Maturity Model (Hudson, 2003)

Dr. Mark Fleming presented another safety culture maturity model in Offshore Technology Report of the Health and Safety Executive in 2001. He described the process for development of safety culture maturity model (SCMM) and proposed a draft SCMM in this report. He identified ten elements of safety culture with literature review and used these elements for the formulation of SCMM. The model is presented in Figure 2.3 .

As seen in the model, safety culture and consistency of the system improve from level 1: emerging stage to level 5: continually improving stage. He mentioned in his article that this is just a draft SCCM and produced in order to give an idea about the concept, and it still needs validations and detailed research to be actually used (Fleming, 2001; Filho *et al.*, 2010).

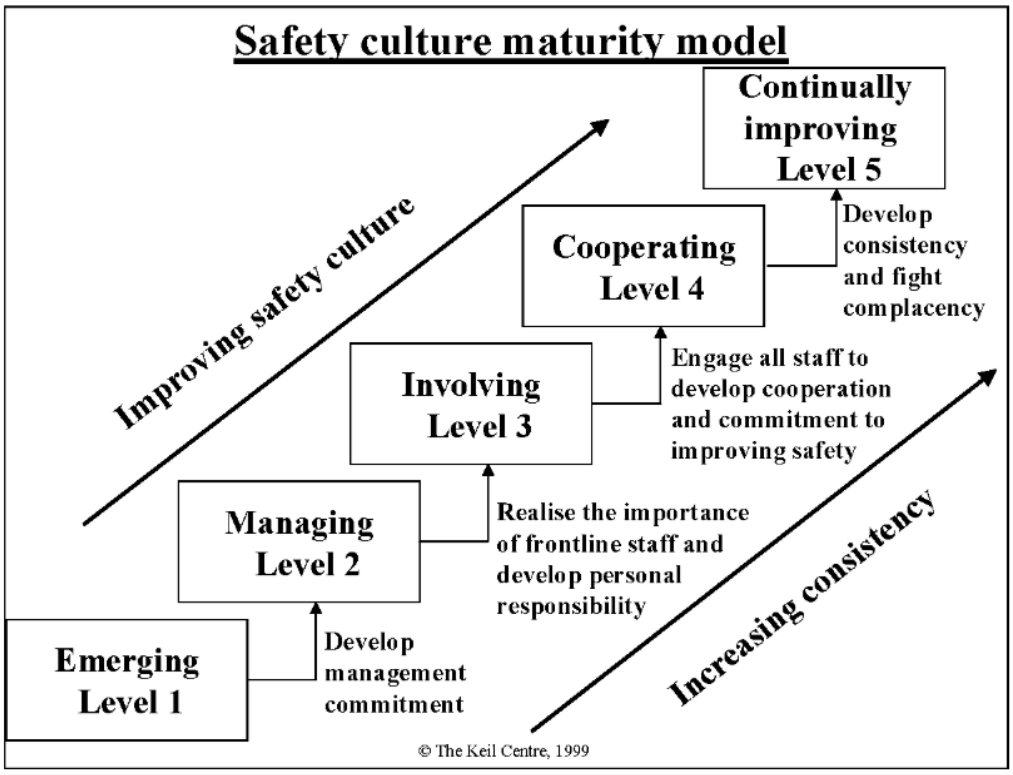


Figure 2.3. Fleming's draft SCMM (Fleming, 2001)

As stated in Chapter 1, MaPSaF was initially developed by a group of scientists in a joint project based on Westrum's and Reason's approaches. The aim of this study is to articulate that the safety culture is a new concept in the health sector and that it is difficult to evaluate and change. This framework presented in the study is designed to make the concept of safety culture more accessible. Even though it was originally designed for use by general practices and primary care institutions, it is currently adapted for use in other healthcare sectors. It helps the organizations to understand their level based on the importance that they give to patient safety. MaPSaF is developed based on Parker and Hudson's (2001) implementation of Westrum's (1993) stage model of organizational culture typology (MaPSaF, 2006).

The safety culture has 5 levels in the MaPSaF and these are pathological, reactive, bureaucratic, proactive, and generative. The brief descriptions of the levels given in MaPSaF are presented in Table 2.4.

Table 2.4. The levels of patient safety culture (MaPSaF, 2006)

Level	Description
Pathological	Why do we need to waste our time on patient safety issues?
Reactive	We take patient safety seriously and do something when we have an incident.
Bureaucratic	We have systems in place to manage patient safety.
Proactive	We are always on the alert/thinking about patient safety issues that might emerge.
Generative	Managing patient safety is an integral part of everything we do.

In MaPSaF, nine patient safety culture dimensions are identified with literature review, feedback from leaders, interviews and discussions between the group of scientists who developed MaPSaF. The nine dimensions in the MaPSaF are: (1) Overall commitment to quality; (2) Priority given to patient safety; (3) Perceptions of the causes of Patient Safety Incidents and their identification; (4) Investigating patient safety incidents; (5) Organizational learning following a patient safety incident; (6) Communication about safety issues; (7) Personnel management and safety issues; (8) Staff education and training about safety issues; and (9) Team working around safety issues (MaPSaF, 2006). The related explanations of the dimensions (exactly as it is given in the MaPSaF) are presented in the Table 2.5. Manchester Patient Safety Framework gives detailed explanation of each level of safety culture under each safety culture dimension.

After MaPSaF, in 2006, Dianne Parker (who is one of the scientists involved in the MaPSaF process) and Patric Hudson (who produced his Cultural Maturity Model in 2003) with Matthew Lawrie formulated a safety culture framework that can be used by organizations to assess their safety culture. This framework used Hudson's model (2001) and was developed after thorough interviews with 26 people from oil and gas industry (Parker *et al*., 2006; Filho *et al*., 2010). In this study, 18 safety culture dimensions are identified. Interviews are conducted for each senior worker from oil and gas sector for 5 levels of safety culture and 18 safety culture dimensions (Parker *et al*., 2006).

Table 2.5. Dimensions of safety culture and their brief description (MaPSaF, 2006)

Dimensions	Description
Overall commitment to quality	How much is invested in developing the quality agenda? What is seen as the main purpose of policies and procedures? What attempts are made to look beyond the organization for collaboration and innovation?
Priority given to patient safety	How seriously is the issue of patient safety taken within the organization? Where does responsibility lie for patient safety issues?
Perceptions of the causes of patient safety incidents and their identification	What sort of reporting systems are there? How are reports of incidents received? How are incidents viewed, as an opportunity to blame or improve?
Investigating patient safety incidents	Who investigates incidents and how are they investigated? What is the aim of the organization? Does the organization learn from the event?
Organizational learning following a patient safety incident	What happens after an incident? What mechanisms are in place to learn from the incident? How are changes introduced and evaluated?
Communication about safety issues	What communication systems are in place? What are their features? What is the quality of record keeping communicating about safety like?
Personnel management and safety issues	How are safety issues managed in the workplace? How are staff problems managed? What are the recruitment and selection procedures like?
Staff education and training about safety issues	How, why and when are education and training programs about patient safety developed? What does staff think of them?
Team working around safety issues	How and why are teams developed? How are teams managed? How much team working is there around patient safety issues?

In this present research, MaPSaF was used to assess the safety culture. The details of why MaPSaF was chosen has a simple explanation, which suggests that the dimensions of the MaPSaF are very generic and can be divided into further aspects easily and these dimensions can be modified for each sector. Also explanations in MaPSaF under each safety culture maturity level are very clear and simple. The researcher considered using the framework of Parker *et al.* (2006), however the level of details of the dimensions proposed in this framework is too much to divide into the aspects and it was thought that some important concepts such as management commitment did not fit into this framework and were rather better explained in MaPSaF.

2.3. Safety Culture Assessments and Application of Safety Culture Maturity Model

There are numerous safety culture assessments that can be found in the literature. Most of the assessments are quantitative assessments. To have a general idea about the safety culture assessments in the literature, mainly review papers were analyzed such as; Glendon and Stanton (2000), (2000), Guldenmund (2007), Flin *et al*.(2000), Choudhry *et al*.(2007).

Guldenmund (2000) emphasized that the earliest safety climate assessment is conducted by Keenan *et al.* (1951) in an automotive plant (Guldenmund, 2000). One of the first well-known safety culture assessments is the one that Zohar conducted in 1980 in the industrial organizations in Israel (Zohar, 1980). In a sample of 20 industrial organizations in Israel, a 40-item organizational climate measure scale for safety was created and validated.

A questionnaire has become the dominant measurement tool in safety culture (safety climate) assessments in literature (Guldenmund, 2000 and 2007). One of the earliest review studies on safety climate belongs to Litherland (1997) (as cited from Glendon and Stanton (2000)). In this paper, Litherland reviewed six studies and listed safety climate dimensions from these studies. These studies were the prior studies on safety culture (safety climate) assessments and these are; Zohar (1980), Brown and Holmes (1986), Glendon *et al*.(1994), Coyle *et al*.(1995), Dedobbeleer and Beland (1991) (as cited from Glendon and Stanton (2000)).

In his review paper, Guldenmund listed 15 safety culture or safety climate assessments, and found out that apart from one (Geller, 1994), all of them were conducted with questionnaires (Guldenmund, 2000). Flin *et al.* (2000) also listed 18 safety culture (climate) assessments, some of which are also referred to in Guldenmund's (2000) paper and tried to find out the common theme used in the questionnaires by the scientists (Flin *et al.*, 2000). They had three criteria to choose the paper as: (1) sample size should be greater than 100, (2) the report should be presented in English, (3) only industrial sectors were included (i.e. retail, clerical,

health sectors were not included.). 50% of the sample comes from the energy / petrochemical industry, which makes up the pioneer industries in this safety field with the establishment of safety climate scales as part of the safety management scales. They found out six common themes among these researches from different industry sectors.

It is easy to see from these review studies that questionnaires (number of questions, number of scales), number of participants, target population (blue collar, managements, senior workers *etc*.) change significantly and also it is obvious that questionnaire has been the predominant measurement tool in safety culture surveys (Guldenmund, 2007).

Organizational capabilities, as well as their management and improvements, are important and complex issues for many companies. Performance evaluations are widely used to support management and ensure improvement. The maturity grids are used as a tool for assessment of organizational capabilities. While maturity grids commonly use similar structures, their content varies and is often redeveloped by the researchers (Maier *et al*., 2012).

Filho and Waterson (2018) published a comprehensive review paper for maturity models in 2018. The aim of their study was to review the conceptual foundations of safety culture and to elaborate on how these conceptual foundations are used in the assessment of safety culture (for example, the types of methods used, the scope of security areas). Total of 41 studies were reviewed in detail, analyzed, and published by Filho and Waterson between 2000 and 2017 (Filho and Waterson, 2018).

According to Filho and Waterson (2018), numerous methods were used for developing, assessing and applying the maturity models to the target groups. The most used method (30 papers) was identified as using the information from previous studies in the literature to formulate the maturity model. Some other researchers used the previous studies in the literature as a basement and mixed this method with interview and expert consultation methods such as Parker *et al.,* (2006) and Kirk *et al.,* (2007). For the assessment and applying process, questionnaires were the most

widely used tool. Some studies used both questionnaire and interview methods to evaluate the safety culture (7 papers). Another method used for assessing safety culture is combining the interviews with the documented evidences related to the OHS system of the organization (Filho and Waterson, 2017).

The types of these publications are grouped under 4 types as; (1) maturity model development (33 papers), maturity model application (4 papers), maturity model validation (2 papers), and maturity model reliability assessments (2 papers). Total of 28 maturity models were developed based on Westrum's and Reasons' approach and they have 5 levels. The only difference is that some of them used the name bureaucratic instead of calculative and some of them used the name sustainable instead of generative.

There is no study found in Filho and Waterson review (2018), which is conducted in the defense sector. Selected samples are briefly explained in following paragraphs. The main logic behind this selection was to show the safety culture maturity model development and application in the high-risk industries like oil and gas and construction.

Parker *et al*. (2006) formulated a framework for the development and maturation of organizational safety culture. The framework was formulated with semi-structured interviews with 26 experienced workers in the oil and gas industry. The model used for the formulation of this framework was based on Westrum's and Reasons' models. Eighteen dimensions were defined under the 5 levels of safety culture. As a result of this study, a matrix containing a brief description of each of the various aspects of organizational safety was created in each of the five levels of safety culture and a discussion was made on the possible usage methods of this matrix.

Lawrie *et al*., (2006) applied maturity model developed by Parker *et al.*, (2006) in oil and gas sector. Because of the time and resource constraints, seven of the eighteen aspects defined in Parker *et al.*, (2006) were selected and used for this study. Questionnaires were distributed to 59 participants who were working in a refinery and chemical plant. Statistical analysis was conducted for the answers in order to

identify whether the stages of the safety culture maturity model were correctly understood by the participants. As conclusion, 5-level safety culture framework partially, not totally, supported this study. When the explanation of some, not all, of the safety culture levels that emerged in the interview were separated and presented to the principle components analysis, they were found to be statistically reliable.

Filho *et al*., (2010) formulated a framework to measure safety culture maturity level in oil and gas companies in Brazil. The formulated model was based on the Hudson's model (Hudson, 2001). Total of 5 dimensions, i.e., information, organizational learning, involvement, communication and commitment, were designed for questionnaire after literature review and this questionnaire was filled out by safety managers of 23 petrochemical companies. As a result, researchers concluded that the concept of maturity model is useful because it allows organizations to determine the current safety culture maturity levels and identify the actions necessary to improve their culture (Filho *et al.*, 2010). Another study was conducted by using the model and the questionnaire developed by Filho *et al*. in 2010 by Filho *et al*. in 2012. In this study, they assessed the safety culture maturity level and safety management maturity level of 3 different types of organizations in Brazil. Total of 346 employees of 28 companies completed the questionnaire (17 companies from petrochemicals, 5 companies from footwear and 6 companies from cable TV). The questionnaire has 22 questions. The results show that petrochemical companies have a higher safety culture maturity level compared to cable TV and footwear companies, and they are also more advanced in terms of risk management maturity (Filho *et al.*, 2012).

As a final example, Astika (2017) formulated and modified Manchester Patient Safety Framework to assess the patient safety culture in 2017. She designed a questionnaire with 10 dimensions and 24 aspects under these 10 dimensions. The dimensions she decided to use were (1) commitment to overall continuous improvement, (2) priority given to patient safety, (3) system error and individual responsibility, (4) recording incidents and best practice, (5) evaluating incident and best practice, (6) learning and effecting change, (7) communication about safety issues, (8) personnel management and safety issues, (9) staff education and training,

(10) team working (Astika, 2017). After that, Agustina implemented this formulated and modified MaPSaF in one hospital in Palembang, Indonesia (Agustina, 2018). Total of 59 people who are from medical and paramedical staff (46 respondents), medical support staff (11) and management (2) participated in the study. As a result, 2 dimensions were classified as generative level (i.e. priority given to patient safety, and personnel management and safety issues) and 1 dimension was classified as bureaucratic level, which is the system error and individual responsibility. The other 7 dimensions were classified as Proactive level (Agustina, 2018).

2.4. Behavior-Based Safety (BBS)

Since the 1930s, safety managers know that most work-related injuries have a behavioral component. More recently, researches have proof that behavioral-based safety (BBS) interventions which are effectively designed have a positive impact on reducing accidents' ratios and injuries (Krause *et al*., 1999). One of the earliest studies conducted by Komaki *et al.* in 1978 showed that behavioral interventions (behavioral program) led to improvement in safe behavior in two departments at the food manufacturing plant. When interventions i.e. behavioral program stopped, the safety performance returned to its original level (Komaki *et al.*,1978; Krause *et al*., 1999; Cox *et al.*, 2004).

As stated before, with domino theory, Heinrich mentioned that unsafe behaviors have an impact on the accidents and he led to discussions about the human behavior and its contributions to the accidents (Heinrich, 1931). Behavioral approaches to improving safety performance are recognized as effective solutions to health and safety challenges (Krause *et al*., 1999). Like the safety culture component, there are many studies conducted related to BBS. Although each study has a unique difference between one another, most of them also have common components defining BBS. Krause *et al*. (1999) conducted a literature survey for BBS and listed frequently mentioned components of BBS as goal setting and posted feedback (Chhokar and Wallin, 1984; Reber *et al.*, 1984 as cited from Krause *et al*., 1999), observation and posted feedback (Komaki *et al.*, 1980 as cited from Krause *et al*., 1999), and

observation, verbal feedback, data analysis, and problem solving (e.g. Krause *et al.*, 1990; Krause, 1995 as cited from Krause *et al*., 1999).

BBS has emerged primarily in areas other than safety, and the approach to building a high-level safety culture with BBS is not a complete new solution. The overall objective of the BBS approach is to reduce safety incidents and workplace injuries. The idea of providing safety by combining already tried and proven techniques to change behavior and improve quality is not surprising. The BBS approach refers to the systematic implementation of psychological research on human behavior in order to turn unsafe behavior into safe behavior. With the BBS approach, it is stated that companies are provided with the tools which they need to change the behavior and attitudes of employees about safety.

Behavior-based safety systems train employees to look for the root causes of their accident-prone behavior and enable them to recognize behavioral trends that cause them to get involved in safety accidents/incidents. It transfers control of the event into the hands of the employee so that the employee becomes proactive with regard to his/her own safety rather than a victim of environmental conditions (Jasiulewicz-Kaczmarek *et al*., 2015).

Behavior-based safety interventions are human-centered, often based on one-on-one or group observations of employees during routine work tasks, feedback on behaviors related to safety, coaching and mentoring. The BBS approach has a proactive focus, motivating a person and/or working groups to assess their behavior as safe or unsafe before someone is harmed and evaluating these behaviors in terms of whether they cause an accident or not (Sutherland *et al*., 2000 as cited from Cox, *et al.*, 2004).

BBS theory refers to observing human behavior without assuming people's thoughts and it usually involves four steps. These steps are defined for many scientists and mainly have a common point of view. Li *et al.*, (2015) listed these steps as (1) identifying unsafe behavior; (2) observing or sampling the identified behaviors over a period of time; (3) giving feedback to increase desired behavior and reduce

unwanted behavior through coaching and mentoring; and (4) provide performance-related feedback to relevant audiences within the organization in its article (Ismail *et al.*, 2012 and Li *et al.*, 2015).

DeJoy (2005) also listed these 4 steps based on Krause (1997) as (1) identifying critical safety behaviors, which is focusing on the safety behaviors that are directly linked with the accidents or injuries and mainly shown by front line employees; (2) observing these behaviors over a period of time and determining performance goals for that behaviors; (3) feedbacks or reinforcement to increase the desired behavior ratio and decrease undesired behavior ratio; and as a fourth step; (4) results and feedbacks tracked and communicated with relevant people in the organization (DeJoy, 2005 and Krause, 1997).

Writh and Sigurdsson (2008) listed main topics for their study related to BBS based on the literature review. These topics were: (a) risk analysis and pinpointing, (b) goal setting, (c) training and prompting, (d) observation and measurement, (e) feedback, and (f) rewards and incentives. Sample research questions under these topics are also presented by Writh and Sigurdsson for best practices related to behavioral safety (Writh and Sigurdsson, 2008).

As a result, they concluded that the involvement of effective behavioral change programs in comprehensive occupational safety programs addressing psychological, social, engineering and organizational concerns may further promote worker's health and safety (Writh and Sigurdsson, 2008).

Jasiulewicz-Kaczmarek *et al*. (2015) made a swot (strong-weak-opportunities-threats) analysis for BBS after a comprehensive literature review in their paper. The result of the swot analysis is presented in Table 2.6 (Jasiulewicz-Kaczmarek *et al*., 2015).

Table 2.6. BBS Swot Analysis (Jasiulewicz-Kaczmarek et al., 2015).

Strengths	Opportunities	Weakness	Treats
Increases safety on site	Builds awareness of safety and site values	Often, only behaviour that is easily recognized without going into the detail is included	Lack of trust to colleagues may cause aversion to the program
Increases interaction between employees and supervisors	Opportunities for communication/knowledge sharing	The quality of feedback depends on the involvement of the observers and surveillance staff analysing the data	The current low level of education of employees may prevent the majority of workers from becoming observers
Provides the opportunity for a high level of employee involvement	Create a set of safety rules that are accepted through involvement	Developing a good plan of observation requires reliable information and continuous analysis of data obtained from previous observations.	Supervisors may resent the task of observers as unwarranted interference
Provides employees with a clear understanding of safe/unsafe behaviour	Change the worker's poor perception of safety	In general, it is necessary to benefit from support of external consultants	No incentive system for observers can cause unfairness during the observation
Development of employee's skills	Problem identification and employee driven solutions	In the absence of involvement and understanding of the principles it may lead to conflicts	The need to respond to all suggestions of employees, regardless of their merits.
Highlights a direct link between behaviour and consequences	Get more employees actively involved.		
Utilizes the basic management principle of measurement to realize improvement.			

There are numerous studies found in the literature related to BBS approach, which cover advantages and disadvantages, BBS management strategies, BBS training methods, BBS implementation methods *etc*. and most of the researchers claim that BBS has a positive impact on safety performance and even safety culture. However, some authors have argued that safety is derived from culture, not from behavior

(Smith, 1999; Cox *et al*., 2004; Elsberry, 2003; Choudhry *et al*., 2007a, b; DeJoy, 2005; Li *et al*., 2015). Dejoy (2005) even discussed it in detail in his article "Behavior Change versus Culture Change" and concluded that behavioral safety represents a powerful, empirical approach to identify and change most important safety behaviors but is often limited to addressing the causes of immediate behavior. The culture change shows a more comprehensive approach, but it lacks a certain and proven process to make changes in the safety culture and means to link these changes to specific safety issues. Both approaches refer to the importance of culture for long-term safety performance (Dejoy, 2005).

There is still some debate among researchers about the best theoretical approach to safety. Some scientists argue that the BBS approach is defective because it is based on the behaviorism theory, which claims that all human behavior is due to external consequences; while in contrast, others argue that the behavior is derived from both internal and external factors as well as social norms. It has also been claimed that these two approaches are subsidiary rather than opposites (Li *et al.*, 2015).

Like Li *et al.* (2015) stated for most of us, it is sufficient that the BBS approaches relate to a systematic application of a psychological point to human behavior, focusing on identifying and modifying important safety behavior, and use these as a way to reduce workplace injuries and losses. The purpose of these safety management approaches/techniques is to encourage employees to adopt safe habits of behavior in which they will perform safely without thinking (Li *et al.*, 2015).

CHAPTER 3

DEVELOPMENT OF SAFETY CULTURE MATURITY QUESTIONNAIRE

3.1. Introduction

Although it is possible to find out both qualitative and quantitative safety culture assessment studies in the literature, the studies mostly used the quantitative methods. There will be many reasons for that but probably one of the common ones is related to time constraint of the studies. Given the participation number of this study, it would not be possible to include such a great number of workers in the study if the qualitative methods were chosen. The approach decided at the beginning of the study is to use the quantitative method to measure the safety culture level of the companies in order to be able to include the high number of workers to the study.

However, as stated before, this study also has a part that corresponds to the development of the safety culture maturity questionnaire, and qualitative methods (interviews, expert consultation sessions) were also used in this part of the study. The details of the related stages that are followed by the development of the safety culture maturity questionnaire are presented in the following sections.

3.2. Determination of the Safety Culture Dimensions and Interview Questions

As stated before, original MaPSaF was used as a basis of this present study. Hence, the dimensions defined in the MaPSaF are not changed as a number. MaPSaF has a total of 9 safety culture dimensions. This structure is kept for this present study. However, the names of 5 dimensions are changed in order to comply with this specific study. It is mainly related to removing the word “patient” from the dimension names. The original names of the dimensions along with the modified names are presented in the Table 3.1.

Table 3.1. Dimensions of the safety culture

Original Dimensions of MaPSaF	Modified names of the dimensions
Overall commitment to quality	Commitment to overall continuous improvement about safety
Priority given to patient safety	Priority given to safety
Perceptions of the causes of patient safety incidents and their identification	Perceptions of the causes of safety incidents
Investigating patient safety incidents	Investigating health and safety incidents
Organizational learning following a patient safety incident	Organizational learning following a safety incident
Communication about safety issues	Communication about safety issues
Personnel management and safety issues	Personnel management and safety issues
Staff education and training about safety issues	Staff education and training about safety issues
Team working around safety issues	Team working around safety issues

The initial attempt to conduct this study was to develop the safety culture maturity matrix and to gather information from workers by using this matrix. However, in the very early stages of the study, the matrix format of the MaPSaF was distributed to the workers and their opinions were collected. All workers mentioned that the structure is very hard to understand and if the researcher modifies the matrix format to the question format, it will be easier to understand. Therefore, it was decided to use questionnaire instead of matrix form.

Following the decision to use the dimension structure in MaPSaF as such, it was decided that the aspects under the dimensions should be clarified, because, more than one aspect is explained under each dimension in the MaPSaF matrix. In order to modify the matrix format to the questionnaire format, the aspects under the dimensions had to be determined. Thus, at first the MaPSaF was reviewed in detail to have an initial idea about the aspects. Then, focus group interviews were conducted with a group of workers.

Open-ended questions were formulated for each dimension in order to be used in the focus group interviews. The main documents used for the identification of the interview questions are from the MaPSaF (MaPSaF, 2006) and the Health and Safety Executive: inspectors human factors toolkit - Common topic 4: Safety culture (HSE, 2005). Industry Safety Culture Evaluation Tool and Guidance (SMICG, 2019) are also used for the development of the interview questions. The interview questions are presented in the Table 3.2.

Table 3.2. Interview questions

Dimensions	**Interview Questions**
Commitment to overall continuous improvement about safety	• How can you describe the approach of the management to safety? • How was the management involved in the safety issues? • How were the safety rules set in the company (policies, procedures etc.)? • What is seen as the main purpose of policies and procedures? (MaPSaF, 2006) • How often is the management seen in the workplace? (HSE, 2005) • Is the management trusted over safety? (HSE, 2005)
Priority given to safety	• How seriously is the issue of safety taken within the organization? (MaPSaF, 2006) • Where does responsibility lie for safety issues? (MaPSaF, 2006) • How are the risks managed in your company? • How are people (all levels, especially managers) involved in safety? (HSE, 2005)
Perceptions of the causes of safety incidents	• How are incidents viewed, as an opportunity to blame or to improve? (MaPSaF, 2006) • What is the focus of incident or accident investigations? Please give examples (SMICG, 2019)
Investigating health and safety incidents	• What sort of reporting systems are in place in your company? • Are you using the reporting system? If yes, do you believe in its effectiveness, if no, what is the main reason behind it? • Who is investigating the incidents in your company? • Are the results of the investigations shared with you?
Organizational learning following a safety incident	• Does the company really learn from accident history, incident reporting *etc*? (HSE, 2005) • What happens after an incident? • How are changes introduced and evaluated? (MaPSaF, 2006)

Table 3.2. Interview questions (Cont'ed.)

Dimensions	Interview Questions
Communication about safety issues	• What communication systems are in place? (MaPSaF, 2006) • Is there effective two-way communication about safety? (HSE, 2005) • Are all safety issues communicated with you? • How often are safety issues discussed; With line manager/subordinate? With colleagues? (HSE, 2005) • How effective is your company's safety communication? (SMICG, 2019)
Personnel management and safety issues	• Do you feel supported in safety issues (reporting, concerns *etc.*)? • Do managers give feedback on safety performance (& how)? (HSE, 2005) • Do you think your approach to safety issues has an impact on your performance assessment? • What is your company's approach to health issues? (Do they only care about your physical health or?)
Staff education and training about safety issues	• Are you getting any safety-related trainings? Are safety trainings effective? • Is all the staff including the management attending the safety trainings? • How, why and when are education and training programs about safety developed? (MaPSaF, 2006) • Do you think that additional safety training should be provided to workers? • Do you feel confident that you have all the training that you need? (HSE, 2005) • How are needs identified? (HSE, 2005)
Team working around safety issues	• Are there any team structures related to safety issues in your company? • How and why are teams developed? And how are teams managed? (MaPSaF, 2006)

3.3. Focus Group Interviews with the Workers

Once the interview questions are formulized, focus group interviews were made with a number of 60 workers. Participants included both blue-collar and white-collar workers and different experiences (seniorities). The interview sessions were conducted with each worker separately. Each session took about 45 to 60 minutes. The demographic variables of workers who are the participants of the focus group interview are given in the Table 3.3.

Table 3.3. Demographic variables of workers

Demographic Variables	**Frequencies**	**Percentages**
	N	%
Age		
20-30	15	25
31-40	31	52
41-50	6	10
51-60	8	13
Total	**60**	**100**
Gender		
Female	8	13
Male	52	87
Total	**60**	**100**
Working Position		
White Collar	12	20
Blue Collar	48	80
Total	**60**	**100**
Total work experience		
2-5 year	6	10
6-10 year	7	12
11-15 year	10	17
16-20	16	26
Longer than 20 years	21	35
Total	**60**	**100**
Work experience in current company		
0-1 year	3	5
2-5 year	24	40
6-10 year	15	25
11-15 year	9	15
16-20	1	1
Longer than 20 years	8	14
Total	**60**	**100**

3.4. Determination of the Aspects

After focus group interviews were completed, the next step was to determine the aspects. The answers of the workers to the interview questions, the dimensions and questions that are given in the Table 3.4. Additionally, their general opinions about the safety issues in their company were assessed by the researcher and 2 health and safety (HS) specialists.

Table 3.4. Dimensions and initial aspects

No	Dimensions	Interview Questions
1	Commitment to overall continuous improvement about safety	1. Commitment to continuous improvement about safety 2. Inspection / audit 3. Written policies and procedures 4. Management commitment
2	Priority given to safety	5. Priority given to safety 6. Responsibility 7. Risk management
3	Perceptions of the causes of safety incidents	8. Blame culture
4	Investigating health and safety incidents	9. Reporting system and its usage 10. Staff feeling on reporting 11. Focus of investigation, investigation system 12. Who is doing the investigations? 13. Results/ output of investigation
5	Organizational learning following a safety incident	14. Learning from safety incidents/accidents 15. Change management
6	Communication about safety issues	16. Information flow 17. Sharing the communication
7	Personnel management and safety issues	18. Does the staff feel supported in safety issues? 19. Work description/recruitment/ performance evaluation 20. Well-being
8	Staff education and training about safety issues	21. Training implementation 22. Management approach to safety trainings 23. Training needs identification
9	Team working around safety issues	24. Team structure 25. The role of team member/engagement

During the determination of the aspects phase, the pilot study of the Astika (Astika, 2017) was reviewed as a useful source for this part of the study. The details related to Astika's study are given in Chapter 2. Aspects chosen by using the safety culture assessments in the literature are basically as follows: detailed explanations in MaPSaF, themes defined under the dimensions by Astika (Astika, 2017), key aspects of an effective culture defined by Health and Safety Executive (HSE, 2005), safety culture characteristics and indicators defined by Industry Safety Culture Evaluation Tool and Guidance (SMICG, 2019).

The data obtained after the interview sessions were evaluated in the form of a workshop with these experts who are working in the field of OHS. As a result of the evaluation, the consensus was reached, and a total of 25 safety culture aspects were determined and distributed under each dimension. The initial dimensions and aspects under these dimensions decided after this process are presented in the Table 3.4.

3.5. Developing the Questionnaire

3.5.1. Developing the Preliminary Questionnaire

At this stage, the questions to be placed under the dimensions and aspects were determined by the researcher. The questions were specifically planned in a short and understandable way. As mentioned earlier, long questions / sentences were found to be difficult to understand by the participants and were not useful for survey efficiency. After questions were formulated by the researcher, a second-round workshop was conducted with the 2 HS specialists (who are the ones that participated in the first workshop conducted for the determination of the aspects).

After the feedback was given by the specialists, the items which had been found to be difficult to understand and the items whose meanings were not clear were changed. Additionally, some wording changes were made as a result of the comments of the HS specialists, such as adding the word "anonymously" in the question 9 and changing the word "OHS expert" in the questions with "OHS Unit",

where it was relevant. One of the most valuable comments of the HS specialists related to the questions was about the difficulty of answering questions that included two statements in one question. Based on these comments and discussions, the questions which had two statements were rewritten. An example for these comments and changes in the questions is given in the Table 3.5. After this second workshop, the final version of the questionnaire was ready to be sent to the experts for the next phase of the study, which is expert consultation session.

Table 3.5. Example for changes in the questions

Original version of Question 6	Modified version of Question 6
Which of the following statements defines your workplace in terms of safety responsibilities? A. Safety responsibilities have not been defined in the workplace. B. Safety responsibilities are handled exclusively by senior management after undesired incidents. C. Safety responsibilities are distributed in the workplace to the role of the OHS Specialist / engineer only and are not adopted. D. Safety responsibilities go under the responsibility of all managers under the consultancy of the OHS specialist, yet they are not adopted by the employees. E. Safety responsibilities are defined for all stakeholders (subcontractors, employees, interns, senior management *etc*.) and these responsibilities are adopted by all.	Which of the following statements defines your workplace in terms of safety responsibilities? A. Safety responsibilities have not been defined in the workplace. B. Safety responsibilities have been defined only for the workers and are perceived as an imposition of the upper management. C. Safety responsibilities have been defined only for the workers and supervisors and are perceived as an imposition of the upper management. D. Safety responsibilities have been defined for the workers, supervisors and the safety department. Upper management has not been included in these responsibilities. E. Safety responsibilities have been defined for all stakeholders (subcontractors, workers, interns, safety department, upper management *etc*.).

3.5.2. Expert Consultation

In order to validate the questionnaire designed by the researcher, a questionnaire was sent to the experts who were not included in the study before and 25 questions were asked to be placed under the 25 aspects given to them. For this, questions and aspects were given in separate sheets with a mixed order and simple explanations about the

meanings of the aspects were also presented. The details related to experts who participated in expert consultation sessions are given in Table 3.6.

Table 3.6. Participants of expert consultation sessions

Expert 1 ***OHS Expert from defense sector***	Mining Engineer, Working as B Class Safety Specialist Over 13 years of experience in OHS field NEBOSH Certificated
Expert 2 ***METU Faculty Member***	Professor in Mining Engineering Department in METU Academic Committee Member of OHS Program in METU
Expert 3 ***HSE Expert from defense sector***	Chemical Engineer, Working as C Class Safety Specialist and also Environmental Officer Certificate Working in the HSE department of the defense company Over 16 years of experience in HSE field
Expert 4 ***Independent Consultant***	Part time instructor in OHS Department in METU A Class Safety Specialist Over 20-year experience in OHS field
Expert 5 **OHS Expert**	Industrial Engineer, Working as B Safety Specialist in Defense sector Over 10 years of experience in OHS field
Expert 6 **OHS Expert**	Geological Engineer, Working as B Class Safety Specialist in Construction and Manufacturing sector Over 15 years of experience in OHS field

The initial idea for this expert consultation session was to remove the questions from the questionnaire, if the experts placed the questions under the aspects that were not originally thought by the researcher. However, as a result of the study, most experts placed most of the questions under the same aspects as the researcher did. Some confusing questions and aspects were discussed with these experts and final changes were made in the questionnaire accordingly. For example, the name of the aspect 6, which was “responsibilities” is changed as “safety related responsibilities” and the name of the aspect 17, which was “sharing the communication” is changed as “safety communication”. Additionally some wording changes were made in questions 3, 4, 13, and 14 by means of discussions with the experts who participated in these expert consultation sessions and were confused about the questions. The output of the expert consultation is given in Table 3.7.

Table 3.7. Output of expert consultations

No	Aspects	Proposed Order of the Questions	Expert 1	Expert 2	Expert 3	Expert 4	Expert 5	Expert 6
1	Commitment to improvement	1	1	1	1	1	1	1
2	Inspection / audit	2	2	2	2	2	2	2
3	Written policies and procedures	3	3	3	3	-	3	4
4	Management commitment	4	4	4	4	3,4	4	3
5	Priority given to safety	5	5	5	5	5	5	5
6	Responsibilities	6	6	6	6	6	6	6
7	Risk management	7	7	7	7	7	7	7
8	Blame culture and punishment	8	8	8	8	8	8	8
9	Reporting system and usage	9	9	9	9	9	9	9
10	Staff feeling on reporting the incident	10	10	10	10	10	10	10
11	Focus of investigation /investigation system	11	11	11	11	11	11	11
12	Who is doing the investigations?	12	12	12	12	12	12	12
13	Results/ output of investigation	13	13	14	13	13	13	13
14	Learning from safety incidents	14	14	13	14	14	14	14
15	Who decide the changes after the incident?	15	15	15	15	15	15	15
16	Information flow	16	16	16	16	16	16	16
17	Sharing the communication	17	17	17	17	17	17	17
18	Do the staffs feel supported?	18	18	18	18	18	18	18
19	Work description/ performance evaluation	19	19	19	19	19	19	19
20	Well-being	20	20	20	20	20	20	20
21	Training implementation	21	21	21	21	21	21	21
22	Management approach to safety trainings	22	22	22	22	22	22	22
23	Training needs identification	23	23	23	23	23	23	23
24	Team structure	24	24	24	24	24	24	24
25	The role of team member/engagement	25	25	25	25	25	25	25

3.6. Results

As a final, total of 9 dimensions (as it is in the MaPSaF), 25 aspects and 25 questions were decided to be used in the safety culture maturity questionnaire. The questions are designed in such a way that each answer represents a level of safety culture. As a result, the answers (statements) under the questions represent; A: Pathological, B: Reactive, C: Bureaucratic, D: Proactive, E: Generative.

The final version of the questionnaire with respected dimensions and aspects implemented for this study is presented in Appendix B. The statistical analysis of the workers' answers are presented in the Chapter 4. The methodology for the implementation of this questionnaire is taking the group of workers in a room, giving brief explanations about the concept, then collecting filled out hard copy questionnaires. However, the first attempt showed that workers do not want to read the questions on their own and get bored very easily. So another approach was used to conduct the questionnaires. Working groups of approximately 20-30 people gathered in the seminar halls and were seated at a distance so that they were not affected by each other's responses. The questions were displayed on the screen one by one, and brief information was given by reading the question. The participants were then asked to mark the appropriate answer on their hard-copy answer sheets. The answer sheet included only the fields that required demographic information and the fields where the answers to the questions had to be written. With this approach, the questionnaires were filled in completely and the paper wastes to be generated were minimized. In this way, instead of printing about 10 pages per participant, 1 page was printed for each participant. Another important concept for this study was to show the participants that the information which they gave will be anonymous and it is not possible to match the questionnaire (answer sheet) and the person filling the questionnaire (answer sheet) by the researcher. For that purpose, an empty sealed box was placed in the room and participants directly threw the filled questionnaire to the box. Researcher explained that the box would be opened after the planned number of workers participated in the study.

CHAPTER 4

IMPLEMENTATION OF THE SAFETY CULTURE MATURITY QUESTIONNAIRE

4.1. Introduction

As stated before, this study includes both qualitative and quantitative approaches. The studies conducted in the chapters described up to this section, i.e. the development of the questionnaire, were carried out by qualitative methods. This section and the followings which are the application of the questionnaire and the assessment of the data obtained from the questionnaire mainly focused on quantitative data.

This study was conducted in two companies in defense sector. The names of the companies surveyed will be kept confidential. Accordingly, in this thesis, these two companies will be referred to as Company A and Company B. The main objectives of this study are to assess the safety culture maturity level of the two companies and to compare these levels, and with this comparison, to show the difference between the companies, based on which one of the two is using Behavior Based Safety. For that purpose, companies with different safety approaches were chosen. Company A has been using Behavior Based Safety concept in their safety approach since 2009, and Company B has mainly been using traditional safety programs.

Brief explanation about the companies and also detailed information about the BBS approach followed in Company A are given below. The important issue is that these two companies are under the same holding and doing business in the same sector. Additionally, the blue-collar employee (which is the main focus group of this study) numbers of both companies are very close to each other.

4.1.1. Company Profile - Company A

Company “A” was founded in 1989 to design and produce wheeled and tracked armored vehicles. The company has produced more than 4000-armoured combat vehicles. Almost 1000 employees have been working in the main facility. These employees include both white-collar employees and blue-collar employees. Among them, 700 of them are white-collar and 300 of them are blue collar. The factory area covers 270,000 square meter open and 60,000 square meter indoor area. Welding, assembly, painting and machining departments are the main production lines. Moreover, design team, maintenance, quality, supply chain, warehouse and administrative activities have been performed and they have provided support to the manufacturing activities. Company “A” has an OHS Unit and 4 full-time safety specialists, 1 full-time and 1 part-time occupational physician, 4 support staff have been working under OHS Unit.

In Company A, following the 2008-year end performance evaluation processes, top management and safety team realized that some things were not going well in their traditional safety approach. The company could not reach its yearly safety targets. These targets were accident frequency and severity rates and those have always been the main constituent of safety targets. In order to determine the root cause of the unsuccessful safety performance, the management established an internal audit team.

Safety experts, HR employees, occupational physicians, and production supervisors were the team members of this internal audit team. Internal audit team made some analysis regarding the accidents that occurred in the factory in previous years (risk assessments, countermeasures, root causes analysis etc.) and also, they made observations and measurements related to working environment (occupational hygiene measurements, housekeeping activities, machine safety analysis etc.). After they finished their investigation, a comprehensive report was prepared and presented to the attention of top management. This report was mainly related to the root causes of the accidents. With this study and this report, it was found out that most of the accidents resulted from unsafe acts of workers. In the conclusion part of the report,

the team indicated, "Following and implementing new safety approaches that depend on behavior changes might be useful to prevent these kinds of accidents instead of applying traditional safety methods."

Thus, the foundations of the Behavior Based Safety (BBS) Management System were laid in Company A. The top management asked to design behavior-based safety management system for the company from OHS unit. The change from traditional safety approach to BBS approach was accepted as a project that needed to be designed and named as the BBS Project. For that purpose, the project team named as OHS Focus Group was established and delegated with top management authority. OHS Focus Group deals with budget, time, human resources, change management, and subjects related to BBS project, because these subjects are the crucial parameters of the planning in the design phase and maintaining sustainable BBS approach.

One of the major questions that concerned the top management was "Could this project be executed internally, or do we need external assistance?''. The answer from the OHS Focus Group was "Yes, assistance is needed, because at that time, no one from the company knows about BBS application in the organization." OHS Focus Group began to investigate a consultancy company that has high-level expertise of BBS establishment. Agreement was made with the third-party consultancy company. The consultancy company started to analyse the profile of Company A and after 4 months, they prepared a new BBS program for it. They presented the new BBS program to the OHS Focus Group first and took their feedback. After the feedback, consultants reviewed the program and it was presented to the top management for any additional comments. Having been evaluated by both OHS Focus Group and top management comments, finally, the new BBS program was ready for implementation.

The vision of the new BBS program was highly acclaimed by top management. The vision statement of the BBS program is: "One day, all employees will be observers and act as observers every day."

The new BBS program had two milestones. The first is the BBS trainings and the second is the Observation Program and Trainings. All employees including top management needed to participate in the new 8-hour BBS training. In other words, everyone had to devote one day to this training.

The contents of the new BBS Program included:

Change Management

- Role Modelling
- Incentives and positive reinforcement
- Management Support
- Time requisition for change
- Removing the obstacles

Effective Management

- Review, Surveillance, Active Listening, Discussion
- Observation, accident and behaviour analysis of management
- Taking action
- Focusing on positive feedback
- Obeying the safety rules
- Following the safety procedure
- Encouraging the workers to participate in safety activities
- Asking open-ended questions onsite (what, how etc.)
- Active Participation from beginning to end
- Problem solving
- Data analysis
- Communication tools
- Thinking about concerns
- Roles and responsibilities
- Comprehensive accident analysis

Ineffective Management

- Inadequate source analysis
- Lack of follow-ups regarding improvements, updates
- Being reactive
- Managing amidst fear
- Emphasizing statistics too much

Employees

- Behaving positively while answering the questions which are related to problem solving and behaviour based desired results.
- Answering more honestly while explaining “what happened and how should we perform” instead of “why did it end like this”

The Chain of Behavior

- Trigger- Behavior-Result
- Trigger- Behavior- Reinforced Result
- Trigger- Behavior- Aversive Result
- The balance between the reinforced results and aversive results is very important for risky behaviour. The balance is substantially affected by working pairs, social environment and frontline supervisor attitudes (summarized as safety climate and culture).

Safe Behaviour

- Instructions/procedures
- Trainings
- Sources
- Supportive Communication
- Role modelling
- Incentives

Observation Process

- Risky behavior is important upon the occurrence of an accident,
- Risky behavior might be observed and measured. Before an accident happens, these observations may give the organization a chance to focus on repetitive risky behavior,
- Factors that trigger risky behavior, reinforced items, and obstacles, can be analyzed and a behavior-based action plan might be implemented so that the behavior can be managed,
- If risky behavior is eliminated, zero accident vision might be realized,
- Safe acts can be seen as a merit among the employees, safety culture will be directly improved,
- Observations should depend on behavior,
- Short-term high frequency observations,
- Training observers based on observation and feedback,
- Using checklists to focus on behavior,
- Informed observation,
- Spontaneous feedback,
- Observation team period should be max 3-4 months, observers should be placed in rotation,
- Results are monthly reviewed (supervisor, observer, employee representative attendance),
- Analysis results and observed changes should be visible and published,
- Risky behavior that is observed in high frequency should be analyzed and actions should be planned and reviewed,
- Top management observation, positive reinforcement, feedback on site,
- Arranging campaigns for chronical issues.

Until now, 640 of the 1000 employees of the Company A have attended the BBS Training. Almost 390 workers became observers. To be an observer, they first attended the BBS training and after that, they received the Observer training,

which takes 8 hours per workday. As an overall target, every observer needed to make and report at least two observations in a week. Observation programs were designed and used with the implementation of BBS approach. 3 observation periods (duration: 4 months) took place every year, and in every period almost 15 different workers acted as observers. In each period, almost 500 risky behaviors were detected and actions to prevent any damage from these behaviors were taken. The most common risky behaviors have been grouped, and the elimination of these behaviors is considered as the target of the departments. If the same behavior for 3 consecutive periods is not detected at all, this risky behavior is considered to have disappeared. To date, 24 of the risky behaviors identified in this context have been eliminated (these 24 risky behaviors were not identified in 3 consecutive periods). Observations take place in 8 working environments such as welding, assembly, machining, painting, maintenance, warehouse, quality and general. Every working environment has its own observation target to eliminate the risky behavior. Until now, 25 observation periods have been completed successfully and as stated, a total of 24 risky behaviors were eliminated during this process.

4.1.2. Company Profile - Company B

Company “B” was founded in 1976 to produce steel construction and machinery and established its facility in 1992. Company “B” has almost 500 employees and among them, 300 of them are blue collar. The facility covers 65,000 square meter and 25,000 square meter of it is closed area. Production has been maintained to machining, welding, painting, and assembly lines. Quality, design, warehouse, purchasing, maintenance and administrative departments have supported production departments. Company “B” has an OHS unit and 1 full-time safety specialist. 1 full-time occupational physician and 1 support staff have been working on it.

Both companies have ISO 45001:2018 Occupational Health and Safety Management Systems Certification. Company “A” is in “Very Hazardous Class” workplace,

company “B” is classified as “Hazardous” according to Occupational Health and Safety Law and its number is 6331.

4.2. Method and Procedure

As explained in detail in the last part of the Chapter 3, the questionnaire was implemented as series of workshop sessions with working groups of approximately 20-30 people. The employees gathered in the seminar halls and were seated at a distance so that they were not affected by each other's responses. The questions were displayed on the screen one by one, and brief information was given by reading the question. The participants were then asked to mark the appropriate answer on their hard-copy answer sheets and throw the filled questionnaire to the box present in the seminar hall.

To determine the required number of participants needed for the study, literature review was conducted. One of the most used methods for the determination of the sample size is Slovin’s formula. The sample size for this study was determined by using Slovin’s formula and the formula is presented below (Agustina, 2018).

$$n = \frac{N}{1 + Ne^2}$$

n = number of sample members

N = number of memebers of population

e = error rate (typically using 1% or 0,01, 5% or 0,05, and 10% or 0,1 that the researcher can select)

The population of the Company A is 1000 workers. The error rate chosen as 5% for this study, hence, found out that this is the main approach for many scientific studies which can be found in the literature. The sample size for Company A then was calculated as 285,71 and rounded up to 286 (taking total employee number as 1000). The population of the Company B is 500 workers. The sample size for Company B then was calculated as 222,22 and rounded up to 223 (taking total employee number

as 500). Considering that the focus of the study is blue-collar workers, and the number of blue collar workers of both companies are almost same 300, samples required for blue-collar workers in both companies was calculated as 171.42 and rounded up to 172.

Total participation number is an over-calculated number for both companies. Additionally, more than 172 blue-collar workers participated in the study in both companies.

4.3. Participants

The total number of participants from Company A who responded to questionnaire was 358. During the data assessment, it was found out that 7 questionnaires were not fully filled by the participants and these questionnaires were removed. Finally, 351 fully filled questionnaires were used for the detailed statistical analysis. Demographic information of the participants from Company A is given in Table 4.1.

As can be seen in Table 4.1, the majority (73.8%) of the participants were blue collar and male (95.2%). In terms of age, 24.2% of participants aged between 20-30 years, 51.0% of participants aged between 31-40 years, 15.7% of participants aged between 41-50 years, 7.1% of participants aged between 51-60 years and 1.1% of participants aged over 60 and only 3 participants stated that their age is 18 (not filling the range in the answer sheet but by writing their ages). The most (26.2%) of the participants have 11-15 years of experience, followed by the over 20 years of experience (23.6%), and 6-10 years of experience (22.2%) and 16-20 years of experience (15.4%) and 2-5 (10.3%). Only 8 participants have a 0-1 year of work experience (2.3%). In terms of work experience in Company A, 9.1% of the participants are working in Company A for 0-1 year, 43.6% of the participants for 2-5 years, 21.9% of the participants for 6-10 years, 14.2% of the participants for 11-15 years, 1.4% of the participants for 16-20 years and 9.7% of the participants are working in Company A for more than 20 years.

Table 4.1. Demographic variables of workers from Company A

Demographic Variables	**Frequencies**	**Percentages**
	N	%
Age		
Lower than 20	3	0.9
20-30	85	24.2
31-40	179	51.0
41-50	55	17.7
51-60	25	7.1
Older than 60	4	1.1
Total	**351**	**100**
Gender		
Female	17	4.8
Male	334	95.2
Total	**351**	**100**
Working Position		
White Collar	92	26.2
Blue Collar	259	73.8
Total	**351**	**100**
Total work experience		
0-1 year	8	2.3
2-5 year	36	10.3
6-10 year	78	22.2
11-15 year	92	26.2
16-20 year	54	15.4
Longer than 20 years	83	23.6
Total	**351**	**100**
Work experience in current company		
0-1 year	32	9.1
2-5 year	153	43.6
6-10 year	77	21.9
11-15 year	50	14.2
16-20 year	5	1.4
Longer than 20 year	34	9.7
Total	**351**	**100**

The total number of participants from Company B who responded to the questionnaire was 248. During the data assessment, it was found out that 16 questionnaires were not fully filled by the participants and these questionnaires were removed. Finally, 232 fully filled questionnaires were used for the detailed statistical analysis. Demographic information of the participants from Company B is given in Table 4.2.

As can be seen in Table 4.2, most of the participants are male and blue collar. The ratio of the male participants is 96.1% and the number is 223, the ratio of the female participants is 3.9% and the number is 9. In terms of working position, 19.0% of the participants are white collar (N=44) and 81% of the participants are blue collar (N=188)

In terms of age, 25.9 % of participants aged between 21-30 years, 51.7% of participants aged between 31-40 years, 17.7% of participants aged between 41-50 years, 4.3% of participants aged between 51-60 years and only 1 participant is over 60 years.

The most (28.4%) of the participants have 11-15 years of experience and are followed by over 20-year experience (26.3), 6-10 years of experience (19.0%), and 16-20 years of experience (16.8%) and 2-5 (9.5%). None of the participants have a 0-1 year of work experience.

In terms of work experience in Company B, 11.6% of the participants are working in Company B for 0-1 year, 62.9% of the participants for 2-5 years, 19.8% of the participants for 6-10 years, 4.3% of the participants for 11-15 years, none of the participants for 16-20 years and 1.3% of the participants have been working in Company B for more than 20 years.

Table 4.2. Demographic variables of workers from Company B

Demographic Variables	**Frequencies**	**Percentages**
	N	%
Age		
20-30	60	25.9
31-40	120	51.7
41-50	41	17.7
51-60	10	4.3
Older than 60	1	0.4
Total	**232**	**100**
Gender		
Female	9	3.9
Male	223	96.1
Total	**232**	**100**
Working Position		
White Collar	44	19.0
Blue Collar	188	81.0
Total	**232**	**100**
Total work experience		
0-1 year	0	0.0
2-5 year	22	9.5
6-10 year	44	19.0
11-15 year	66	28.4
16-20 year	39	16.8
Longer than 20 year	61	26.3
Total	**232**	**100**
Work experience in current company		
0-1 year	27	11.6
2-5 year	146	62.9
6-10 year	46	19.8
11-15 year	10	4.3
16-20	0	0.0
Longer than 20 year	3	1.3
Total	**232**	**100**

4.4. Analyzing the Data

The final safety culture maturity questionnaire has 25 questions. The questions are designed in such a way that each answer represents a level of safety culture. As a result, the answers (statements) under the questions represent; A: Pathological, B: Reactive, C: Bureaucratic, D: Proactive, E: Generative.

Although demographic information was collected within the scope of this study, no comparison was made regarding demographic information, since the main subject of the study was the comparison of the current safety culture of the two companies.

The studies on the comparison of demographic data can be considered as future studies. Additionally, with the results of this study, companies can decide on the areas that they should focus on and determine the target group by using demographic data for the implementation of improvement measures.

The collected data assessed both Company A and Company B separately and the results are shown in the following section.

4.4.1. Reliability Analysis

The reliability of the results obtained from measurement tools is one of the most important subjects of the studies conducted in psychological and educational field. The alpha coefficient developed by Cronbach (1951) is used to assess the internal consistency of a single test (İnal *et al*., 2017). Cronbach's alpha coefficient (Cronbach, 1951) is absolutely one of the most important and used statistic parameters in scale/test development and implementation. When the literature from Social Sciences Citation Index was examined from 1966 to 1990, it was found that Cronbach's (1951) article was cited approximately 60 times a year and in a total of 278 different journals (Cortina, 1993). Alpha has been developed to provide a measure of a test or scale related to its internal consistency, and it is expressed as a number between 0 and 1. In the literature, there are many different articles on acceptable alpha values, which generally range from 0.70 to 0.95 (Tavakol and

Dennick, 2011). One of the classifications for the Cronbach's alpha is; <0.6 is poor, 0.6 to 0.69 moderate, 0.7 to 0.79 good, 0.8 to 0.89 very good and >0.9 excellent (Hair *et al.*, 2003 derived from Shamsuddin *et al*., 2015). In conclusion, values above 0.7 for Cronbach alpha are acceptable in literature and above 0.9 are considered to be the best.

The data gathered from the questionnaires was analyzed in the Statistical Package for Social Science (SPSS) to assess the data regarding the internal consistency. A reliability analysis was conducted by using SPSS and Cronbach's alpha internal consistency score for the scale was calculated separately for Company A and Company B. The results are shown in the Table 4.3. As can be seen from the results, both internal consistency scores are over 0.9, which is the best range for a scale.

Table 4.3. Cronbach's alpha for internal consistency scores

Case processing Summary -Company A		
Cases	**N**	**%**
Valid	351	100.0
Excluded	0	.0
Total	351	100.0
Reliability Statistics – Company A		
Cronbach's Alpha		**N of Items**
.928		25
Case processing Summary -Company B		
Cases	**N**	**%**
Valid	232	100.0
Excluded	0	.0
Total	232	100.0
Reliability Statistics- Company B		
Cronbach's Alpha		**N of Items**
.938		25

4.4.2. Company A - Analyzing the Data

Dimension 1 was "**commitment to overall continuous improvement about safety**" and it includes 4 different aspects, hence 4 different questions. The overall answers of workers from Company A are given in the Table 4.4.

As can be seen in Table 4.4, the majority of the participants classified Company A as Generative (65.0%) in terms of Aspect 1, which is "***commitment to continuous improvement about safety***", and it is followed by Proactive (22.5%), Bureaucratic (6.8%), Reactive (4.3%) and Pathological (1.4%). The distribution of Aspect 2, which is "***inspection/audit***", mainly shows Generative level (70.1%) and it is followed by Proactive (18.2%), Bureaucratic (7.7%), Reactive (3.4%) and Pathological (0.6%), respectively.

Table 4.4. Responds-Dimension 1-Company A

Responds	**Pathological**		**Reactive**		**Bureaucratic**		**Proactive**		**Generative**	
	N	%	N	%	N	%	N	%	N	%
Aspect 1 Commitment to continuous improvement about safety	5	1.4	15	4.3	24	6.8	79	22.5	228	65.0
Aspect 2 Inspection / audit	2	0.6	12	3.4	27	7.7	64	18.2	246	70.1
Aspect 3 Written Policies and procedures	0	0.0	8	2.3	33	9.4	156	44.4	154	43.9
Aspect 4 Management commitment	1	0.3	3	0.9	50	14.2	67	19.1	230	65.5

For Aspect 3, which is "***written policies and procedures***", no one classified Company A in Pathological level, however the number of participants who choose proactive level (44.4%) has exceeded the number of participants who choose generative level (43.9%). The majority of the participants classified Company A as Generative (65.5%) in terms of Aspect 4, which is "***management commitment***", and it is followed by Proactive (19.1%), Bureaucratic (14.2%), Reactive (0.9%) and

Pathological (0.3%). Graphical presentation of the responses of the aspects under dimension 1 is given in the Figure 4.1.

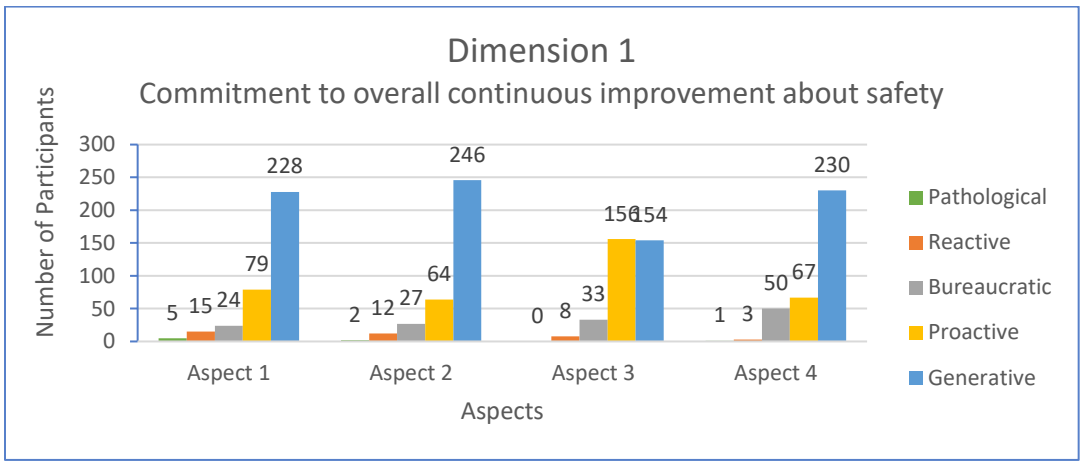


Figure 4.1. Responds-Dimension 1-Company A

Dimension 2 was "***priority given to safety***" and it includes 3 different aspects, hence 3 different questions. The overall answers of workers from Company A are given in the Table 4.5.

Table 4.5. Responds-Dimension 2-Company A

Responds	**Pathological**		**Reactive**		**Bureaucratic**		**Proactive**		**Generative**	
	N	%	N	%	N	%	N	%	N	%
Aspect 5 Priority given to safety	1	0.3	9	2.6	65	18.5	101	28.8	175	49.9
Aspect 6 Safety related responsibilities	0	0.0	13	3.7	23	6.6	50	14.2	265	75.5
Aspect 7 Risk management	0	0.0	13	3.7	22	6.3	110	31.3	206	58.7

As can be seen in Table 4.5, the distribution of Aspect 5, which is "***priority given to safety***", mostly shows Generative level (49.9%) and it is followed by Proactive (28.8%), Bureaucratic (18.5%), Reactive (2.6%) and Pathological (0.3%), respectively. The majority of the participants classified Company A as Generative (75.5%) in terms of Aspect 6, which is "***safety related responsibilities***", and it is followed by Proactive (14.2%), Bureaucratic (6.6%), Reactive (3.7%) and none of

them choose Pathological level. For Aspect 7, which is "***risk management***", no one classified Company A in Pathological level, the majority of the participants classified Company A as Generative (58.7%), and it is followed by Proactive (31.3%), Bureaucratic (6.3%), Reactive (3.7%). Graphical presentation of the responses of the aspects under dimension 2 is given in the Figure 4.2.

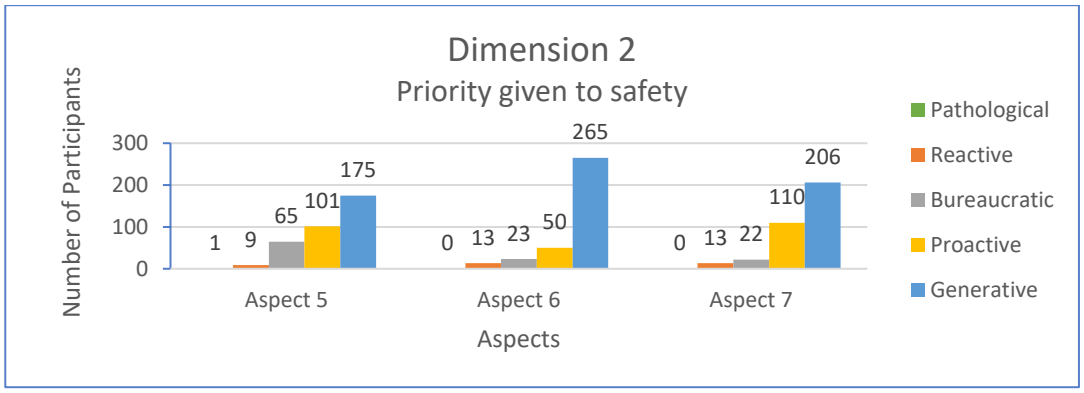


Figure 4.2. Responds-Dimension 2-Company A

Dimension 3 was "***perceptions of the causes of safety incidents***" and it includes only one aspect, hence 1 question. The overall answers of workers from Company A are given in the Table 4.6.

Table 4.6. Responds-Dimension 3-Company A

Responds	**Pathological**		**Reactive**		**Bureaucratic**		**Proactive**		**Generative**	
	N	%	N	%	N	%	N	%	N	%
Aspect 8 Blame culture	2	0.6	16	4.6	44	12.5	105	29.9	184	52.4

As can be seen in Table 4.6, the distribution of Aspect 8, which is "***blame culture***", mostly shows Generative level (52.4%) and it is followed by Proactive (29.9%), Bureaucratic (12.5%), Reactive (4.6%) and Pathological (0.6%). Graphical presentation of the responses of the aspect under dimension 3 is given in the Figure 4.3.

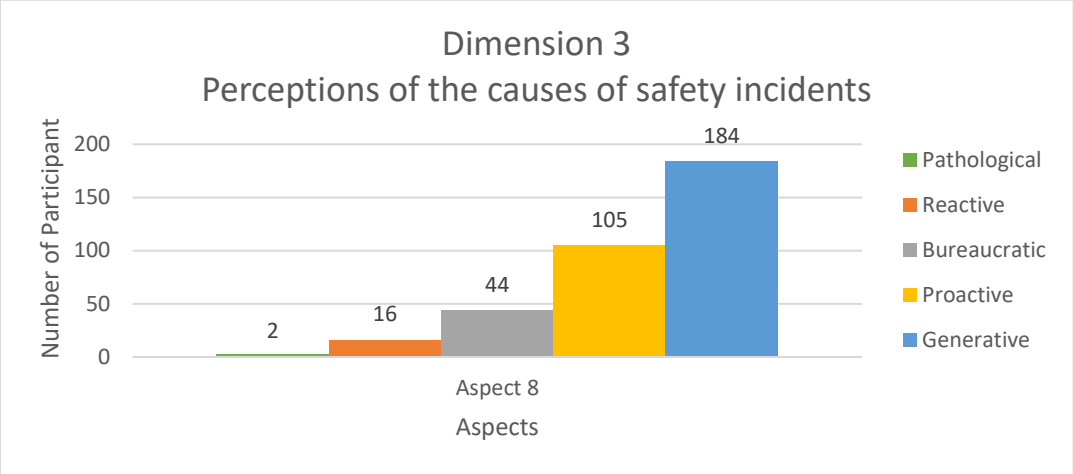


Figure 4.3. Responds-Dimension 3-Company A

Dimension 3 was "**investigating health and safety incidents**" and it includes 5 different aspects, hence 5 different questions. The overall answers of workers from Company A are given in the Table 4.7.

Table 4.7. Responds-Dimension 4-Company A

Responds	**Pathological**		**Reactive**		**Bureaucratic**		**Proactive**		**Generative**	
	N	%	N	%	N	%	N	%	N	%
Aspect 9 Reporting system and its usage	1	0.3	6	1.7	34	9.7	123	35.0	187	53.3
Aspect 10 Staff feeling on reporting	10	2.8	11	3.1	89	25.4	141	40.2	100	28.5
Aspect 11 Focus of investigation /investigation system	0	0.0	9	2.6	43	12.3	169	48.1	130	37.0
Aspect 12 Who is doing the investigations?	0	0.0	35	10.0	58	16.5	117	33.3	141	40.2
Aspect 13 Results of investigation	1	0.3	11	3.1	32	9.1	101	28.8	206	58.7

As can be seen in Table 4.7, most of the participants classified Company A as Generative (53.3%) in terms of Aspect 9, which is "***reporting system and its usage***", and it is followed by Proactive (35.0%), Bureaucratic (9.7%), Reactive (1.7%) and Pathological (0.3%). The distribution of Aspect 10, which is "***staff feeling on***

reporting", mainly shows Proactive level (40.2%) and it is followed by Generative (28.5%), Bureaucratic (25.4%), Reactive (3.1%) and Pathological (2.8%).

For Aspect 11, which is "***focus of investigation /investigation system***", no one classified Company A in Pathological level, however the number of participants who choose proactive level (48.1%) has exceeded the number of participants who choose generative level (37.0%).

The majority of the participants classified Company A as Generative (40.2%) in terms of Aspect 12, which is "***who is doing the investigations?***", and it is followed by Proactive (33.3%), Bureaucratic (16.5%), Reactive (10.0%) and no one classified Company A in Pathological level.

Lastly, the distribution of Aspect 13, which is "***results of investigation***", mainly shows Generative level (58.7%) and it is followed by Proactive (28.8%), Bureaucratic (9.1%), Reactive (3.1%) and Pathological (0.3%). Graphical presentation of the responses of the aspects under dimension 4 is given in the Figure 4.4.

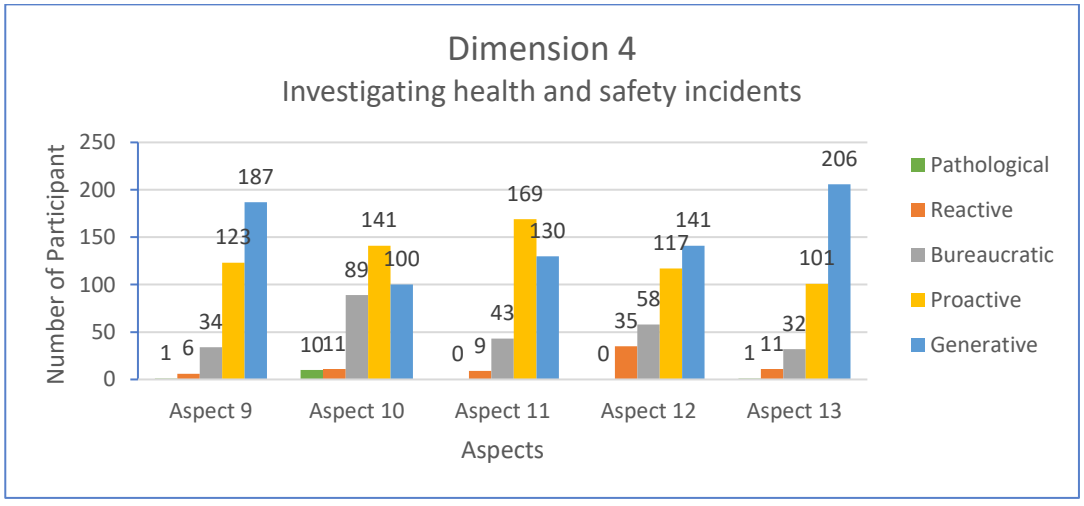


Figure 4.4. Responds-Dimension 4-Company A

Dimension 5 was "**organizational learning following a safety incident**" and it includes 2 different aspects, hence 2 different questions. The overall answers of workers from Company A are given in the Table 4.8.

Table 4.8. Responds-Dimension 5-Company A

Responds	**Pathological**		**Reactive**		**Bureaucratic**		**Proactive**		**Generative**	
	N	%	N	%	N	%	N	%	N	%
Aspect 14 Learning from safety incidents	0	0.0	6	1.7	53	15.1	140	39.9	152	43.3
Aspect 15 Change management	4	1.1	27	7.7	103	29.3	134	38.2	83	23.6

As can be seen in Table 4.8, most of the participants classified Company A as Generative (43.3%) in terms of Aspect 14, which is "***learning from safety incidents***", and it is followed by Proactive (39.9%), Bureaucratic (15.1%), Reactive (1.7%) and no one classified Company A in Pathological level. The distribution of Aspect 15, which is "**change management**", mainly shows Proactive level (38.2%) and it is followed by Bureaucratic (29.3%), Generative (23.6%), Reactive (7.7%) and Pathological (1.1%). Graphical presentation of the responses of the aspects under dimension 5 is given in the Figure 4.5.

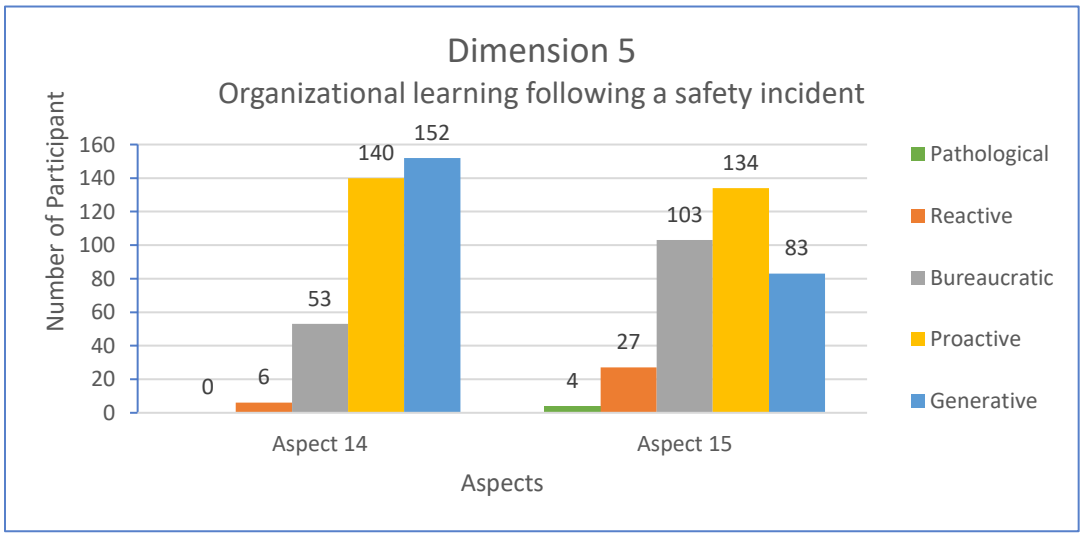


Figure 4.5. Responds-Dimension 5-Company A

Dimension 6 was "**communication about safety issues**" and it includes 2 different aspects, hence 2 different questions. The overall answers of workers from Company A are given in the Table 4.9.

Table 4.9. Responds-Dimension 6-Company A

Responds	**Pathological**		**Reactive**		**Bureaucratic**		**Proactive**		**Generative**	
	N	%	N	%	N	%	N	%	N	%
Aspect 16 Information flow	4	1.1	8	2.3	38	10.8	114	32.5	187	53.3
Aspect 17 Safety communication	5	1.4	19	5.4	73	20.8	107	30.5	147	41.9

As can be seen in Table 4.9, the most of the participants classified Company A as Generative (53.3%) in terms of Aspect 16, which is "**information flow**", and it is followed by Proactive (32.5%), Bureaucratic (10.8%), Reactive (2.3%) and Pathological (1.1%). The distribution of Aspect 17, which is "***safety communication***", mainly shows Generative level (41.9%) and it is followed by Proactive (30.5), Bureaucratic (20.8%), Reactive (5.4%) and Pathological (1.4%). Graphical presentation of the responses of the aspects under dimension 6 is given in the Figure 4.6 below.

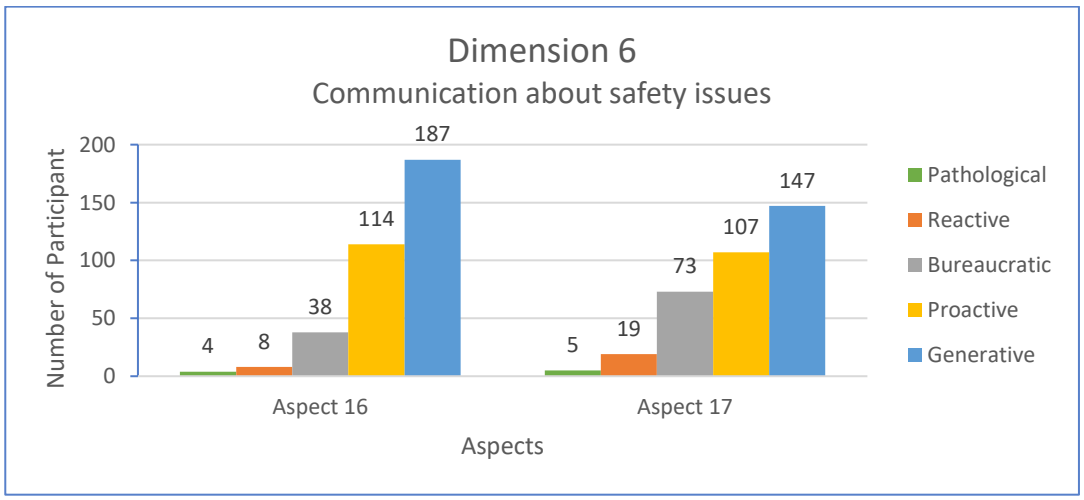


Figure 4.6. Responds-Dimension 6-Company A

Dimension 7 was "***personnel management and safety issues***" and it includes 3 different aspects, hence 3 different questions. The overall answers of workers from Company A are given in the Table 4.10.

Table 4.10. Responds-Dimension 7-Company A

Responds	**Pathological**		**Reactive**		**Bureaucratic**		**Proactive**		**Generative**	
	N	%	N	%	N	%	N	%	N	%
Aspect 18 Do the staffs feel supported?	11	3.1	15	4.3	70	19.9	125	35.6	130	37.0
Aspect 19 Work description/recruitment/ performance evaluation	5	1.4	12	3.4	37	10.5	96	27.4	201	57.3
Aspect 20 Wellbeing	9	2.6	32	9.1	55	15.7	102	29.1	153	43.6

As can be seen in Table 4.10, the most of the participants classified Company A as Generative (37.0%) in terms of Aspect 18, which is "***do the staffs feel supported?***", and it is followed by Proactive (35.6%), Bureaucratic (19.9%), Reactive (4.3%) and Pathological (3.1%). The distribution of Aspect 19, which is "***work description/recruitment/ performance evaluation***", mainly shows Generative level (57.3%) and it is followed by Proactive (27.4), Bureaucratic (10.5%), Reactive (3.4%) and Pathological (1.4%). The majority of the participants classified Company A as Generative (43.6%) in terms of Aspect 20, which is "***wellbeing***", and it is followed by Proactive (29.1%), Bureaucratic (15.7%), Reactive (9.1%) and Pathological (2.6%). Graphical presentation of the responses of the aspects under dimension 7 is given in the Figure 4.7.

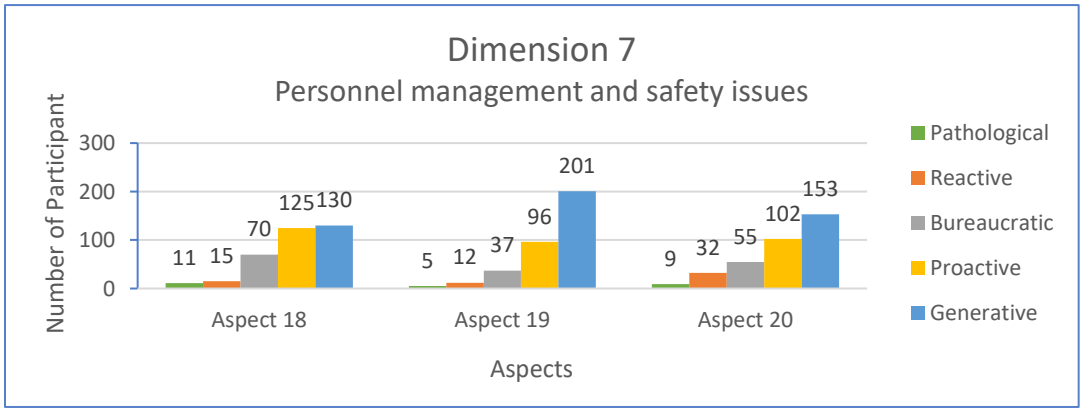


Figure 4.7. Responds-Dimension 7-Company A

Dimension 8 was "***staff education and training about safety issues***" and it includes 3 different aspects, hence 3 different questions. The overall answers of workers from Company A are given in the Table 4.11.

Table 4.11. Responds-Dimension 8-Company A

Responds	**Pathological**		**Reactive**		**Bureaucratic**		**Proactive**		**Generative**	
	N	%	N	%	N	%	N	%	N	%
Aspect 21 Training implementation	0	0.0	21	6.0	26	7.4	111	31.6	193	55.0
Aspect 22 Management approach to safety trainings	1	0.3	5	1.4	70	19.9	135	38.5	140	39.9
Aspect 23 Training needs identification	12	3.4	31	8.8	66	18.8	147	41.9	95	27.1

As can be seen in Table 4.11, the majority of the participants classified Company A as Generative (55.0%) in terms of Aspect 21, which is "***training implementation***", and it is followed by Proactive (31.6%), Bureaucratic (7.4%), Reactive (6.0%) and no one classified Company A in Pathological level. The distribution of Aspect 22, which is "***management approach to safety trainings***", mainly shows Generative level (39.9%) and Proactive (38.5%) and it is followed by Bureaucratic (19.9%), Reactive (1.4%) and Pathological (0.3%). The majority of the participants classified Company A as Proactive (41.9%) in terms of Aspect 23, which is "***training needs identification***", and it is followed by Generative (27.1%), Bureaucratic (18.8%), Reactive (8.8%) and Pathological (3.4%). Graphical presentation of the responses of the aspects under dimension 8 is given in the Figure 4.8.

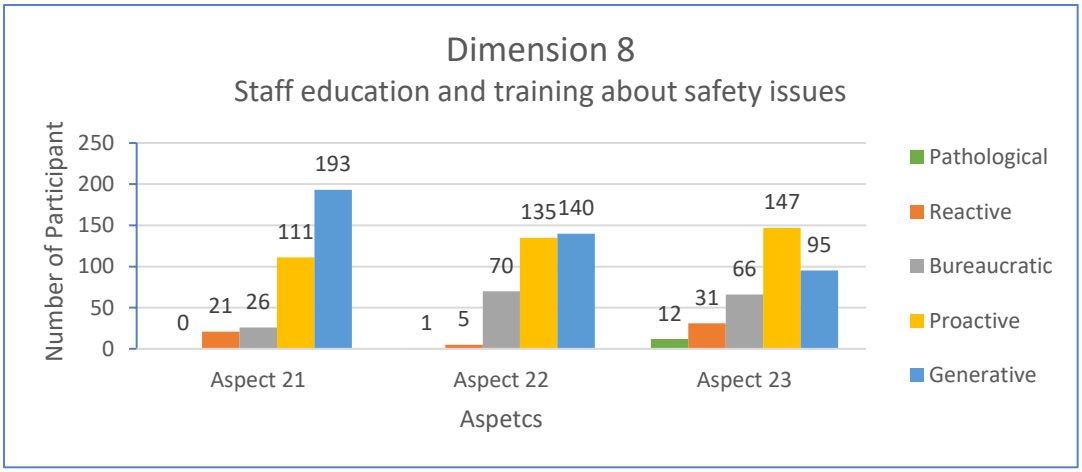


Figure 4.8. Responds-Dimension 8-Company A

Dimension 9 was "***team working around safety issues***" and it includes 2 different aspects, hence 2 different questions. The overall answers of workers from Company A are given in the Table 4.12.

Table 4.12. Responds-Dimension 9-Company A

Responds	**Pathological**		**Reactive**		**Bureaucratic**		**Proactive**		**Generative**	
	N	%	N	%	N	%	N	%	N	%
Aspect 24 Team structure	4	1.1	3	0.9	45	12.8	122	34.8	177	50.4
Aspect 25 The role of team member/ engagement	8	2.3	7	2.0	50	14.2	114	32.5	172	49.0

As can be seen in Table 4.12, the majority of the participants classified Company A as Generative (50.4%) in terms of Aspect 24, which is "***team structure***", and it is followed by Proactive (34.8%), Bureaucratic (12.8%), Pathological (1.1%) and Reactive (0.9%). The distribution of Aspect 25, which is "***the role of team member/engagement***", mainly shows Generative level (49.0%) and Proactive (32.5%) and it is followed by Bureaucratic (14.2%), Pathological (2.3%) and Reactive (2.0%). Graphical presentation of the responses of the aspects under dimension 9 is given in the Figure 4.9.

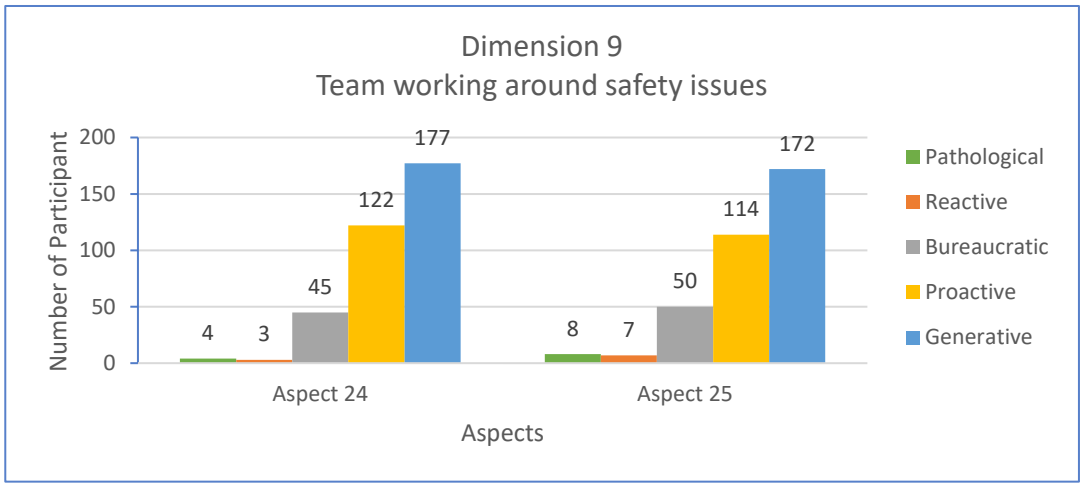


Figure 4.9. Responds-Dimension 9-Company A

4.4.3. Company B - Analyzing the Data

Dimension 1 was "**commitment to overall continuous improvement about safety**" and it includes 4 different aspects, hence 4 different questions. The overall answers of workers from Company B are given in the Table 4.13.

Table 4.13. Responds-Dimension 1-Company B

Responds	**Pathological**		**Reactive**		**Bureaucratic**		**Proactive**		**Generative**	
	N	%	N	%	N	%	N	%	N	%
Aspect 1 Commitment to continuous improvement about safety	10	4.3	14	6.0	28	12.1	87	37.5	93	40.1
Aspect 2 Inspection / audit	6	2.6	27	11.6	34	14.7	79	34.1	86	37.1
Aspect 3 Written Policies and procedures	1	0.4	11	4.7	53	22.8	106	45.7	61	26.3
Aspect 4 Management commitment	5	2.2	15	6.5	66	28.4	64	27.6	82	35.3

As can be seen in Table 4.13, the majority of the participants classified Company B as Generative (40.1%) in terms of Aspect 1, which is "***commitment to continuous improvement about safety***", and it is followed by Proactive (37.5%), Bureaucratic (12.1%), Reactive (6.0%) and Pathological (4.3%). The distribution of Aspect 2, which is "***inspection/audit***", mainly shows Generative level (37.1%) and it is followed by Proactive (34.1%), Bureaucratic (14.7%), Reactive (11.6%) and Pathological (2.6%), respectively. For Aspect 3, which is "***written policies and procedures***", the number of participants who choose proactive level (45.7%) has exceeded the number of participants who choose generative level (26.3%) and it is followed by Bureaucratic (22.8%), Reactive (4.7%) and Pathological (0.4%), respectively. The majority of the participants classified Company B as Generative (35.3%) in terms of Aspect 4, which is "***management commitment***", and it is followed by Bureaucratic (28.4%), Proactive (27.6%), Reactive (6.5%) and Pathological (2.2%). Graphical presentation of the responses of the aspects under dimension 1 is given in the Figure 4.10.

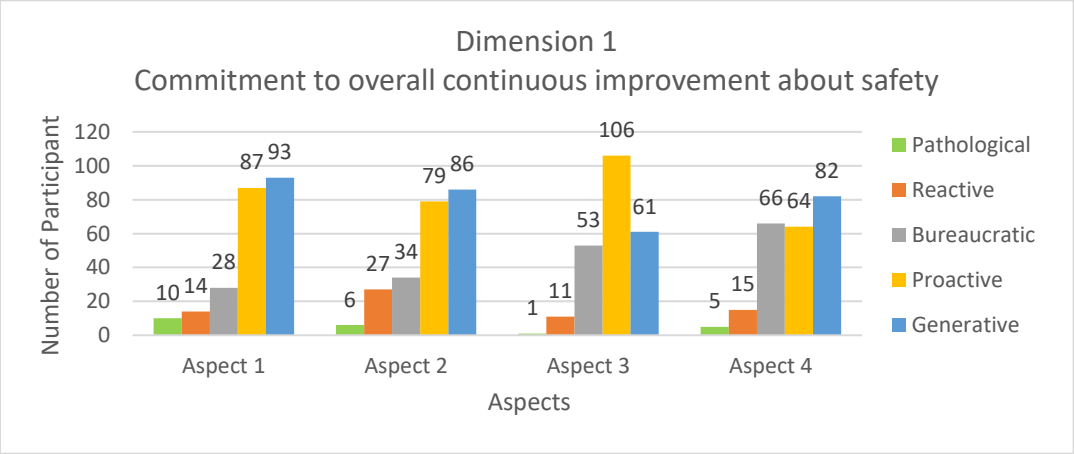


Figure 4.10. Responds-Dimension 1-Company B

Dimension 2 was "***priority given to safety***" and it includes 3 different aspects, hence 3 different questions. The overall answers of workers from Company B are given in the table below.

As can be seen in Table 4.14, the distribution of Aspect 5, which is "***priority given to safety***", mostly shows Generative level (34.9%) and it is followed by Proactive

(27.2%), Bureaucratic (23.3%), Reactive (12.1%), and Pathological (2.6%), respectively.

Table 4.14. Responds-Dimension 2-Company B

Responds	**Pathological**		**Reactive**		**Bureaucratic**		**Proactive**		**Generative**	
	N	%	N	%	N	%	N	%	N	%
Aspect 5 Priority given to safety	6	2.6	28	12.1	54	23.3	63	27.2	81	34.9
Aspect 6 Safety-related responsibilities	0	0.0	8	3.4	19	8.2	61	26.3	144	62.1
Aspect 7 Risk management	4	1.7	17	7.3	31	13.4	86	37.1	94	40.5

The majority of the participants classified Company B as Generative (62.1%) in terms of Aspect 6, which is "***safety-related responsibilities***", and it is followed by Proactive (26.3%), Bureaucratic (8.2%), Reactive (3.4%) and none of them choose Pathological level. For Aspect 7, which is "***risk management***", the majority of the participants classified Company B as Generative (40.5%), and it is followed by Proactive (37.1%), Bureaucratic (13.4%), Reactive (7.3%) and Pathological (1.7%). Graphical presentation of the responses of the aspects under dimension 2 is given in the Figure 4.11.

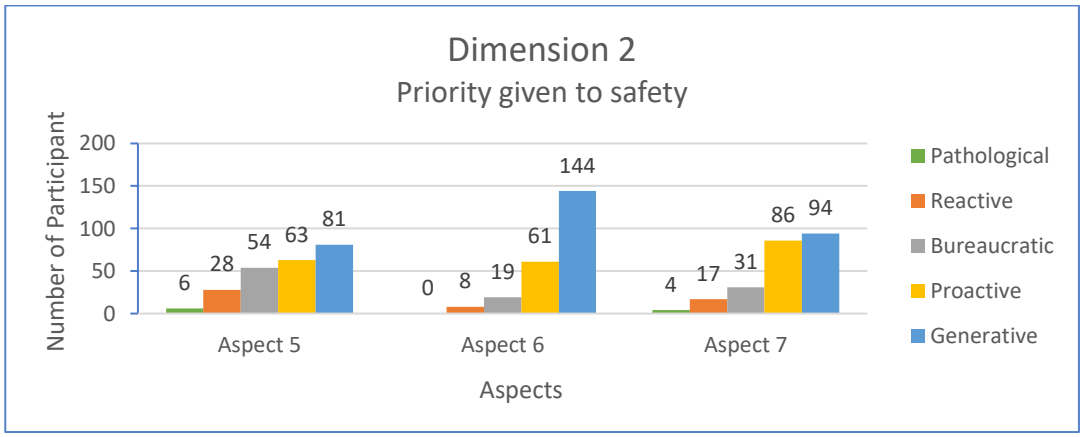


Figure 4.11. Responds-Dimension 2-Company B

Dimension 3 was "***perceptions of the causes of safety incidents***" and it includes one aspect, hence 1 question. The overall answers of workers from Company B are given in the Table 4.15.

Table 4.15. Responds-Dimension 3-Company B

Responds	**Pathological**		**Reactive**		**Bureaucratic**		**Proactive**		**Generative**	
	N	%	N	%	N	%	N	%	N	%
Aspect 8 Blame culture	1	0.4	36	15.5	37	15.9	77	33.2	81	34.9

As can be seen in Table 4.15 , The majority of the participants classified Company B as Generative (34.9%) and also Proactive (33.2%), in terms of Aspect 8, which is "**blame culture''** and it is followed by Bureaucratic (15.9%), Reactive (15.5%) and Pathological (0.4%). Graphical presentation of the responses of the aspect under dimension 3 is given in the Figure 4.12.

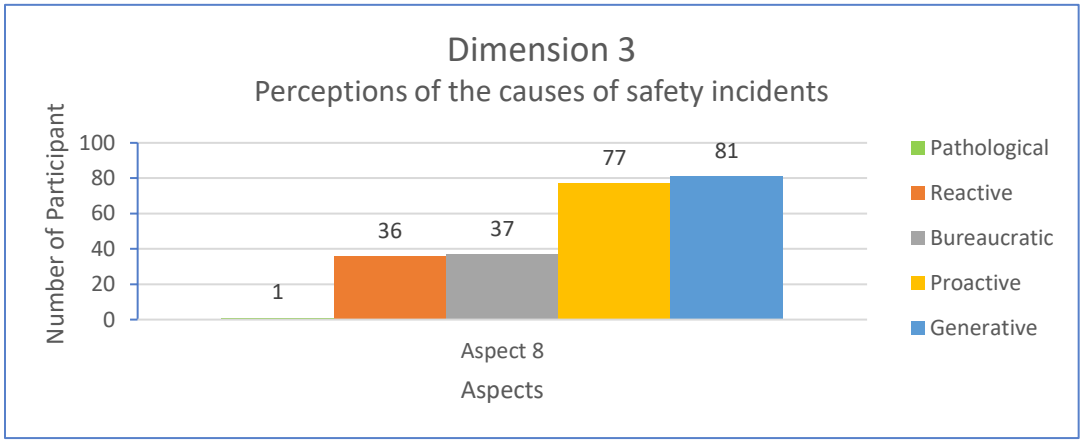


Figure 4.12. Responds-Dimension 3-Company B

Dimension 4 was "**investigating health and safety incidents**" and it includes 5 different aspects, hence 5 different questions. The overall answers of workers from Company B are given in the Table 4.16.

As can be seen in Table 4.16, most of the participants classified Company B as Proactive (35.3%), in terms of Aspect 9, which is "**reporting system and its usage**", and it is followed by Generative (27.2%), Bureaucratic (20.3%), and Reactive (9.1%)

and Pathological (8.2%). The distribution of Aspect 10, which is "**staff feeling on reporting**", mainly shows Proactive (31.9%), and it is followed by Bureaucratic (25.0%), Generative (23.3%) and Reactive (12.9%), and Pathological (6.9%). For Aspect 11, which is "**focus of investigation /investigation system**", the majority of the participants classified Company B as Proactive (39.7%), and it is followed by Generative (29.7%), Bureaucratic (16.4%), Reactive (11.2%) and Pathological (3.0%). The majority of the participants classified Company B as Bureaucratic (34.9%) in terms of Aspect 12, which is "**who is doing the investigations?**", and it is followed by Proactive (24.6%), Generative (19.4%) Reactive (18.1%), and Pathological (3.0%). Lastly, the distribution of Aspect 13, which is "**results of investigation**", mainly shows Proactive (40.5%) and it is followed by Generative level (30.2%), Bureaucratic (21.1%), Reactive (5.6%) and Pathological (2.6%). Graphical presentation of the responses of the aspects under dimension 4 is given in the Figure 4.13.

Table 4.16. Responds-Dimension 4-Company B

Responds	**Pathological**		**Reactive**		**Bureaucratic**		**Proactive**		**Generative**	
	N	%	N	%	N	%	N	%	N	%
Aspect 9 Reporting system and its usage	19	8.2	21	9.1	47	20.3	82	35.3	63	27.2
Aspect 10 Staff feeling on reporting	16	6.9	30	12.9	58	25.0	74	31.9	54	23.3
Aspect 11 Focus of investigation /investigation system	7	3.0	26	11.2	38	16.4	92	39.7	69	29.7
Aspect 12 Who is doing the investigations?	7	3.0	42	18.1	81	34.9	57	24.6	45	19.4
Aspect 13 Results of investigation	6	2.6	13	5.6	49	21.1	94	40.5	70	30.2

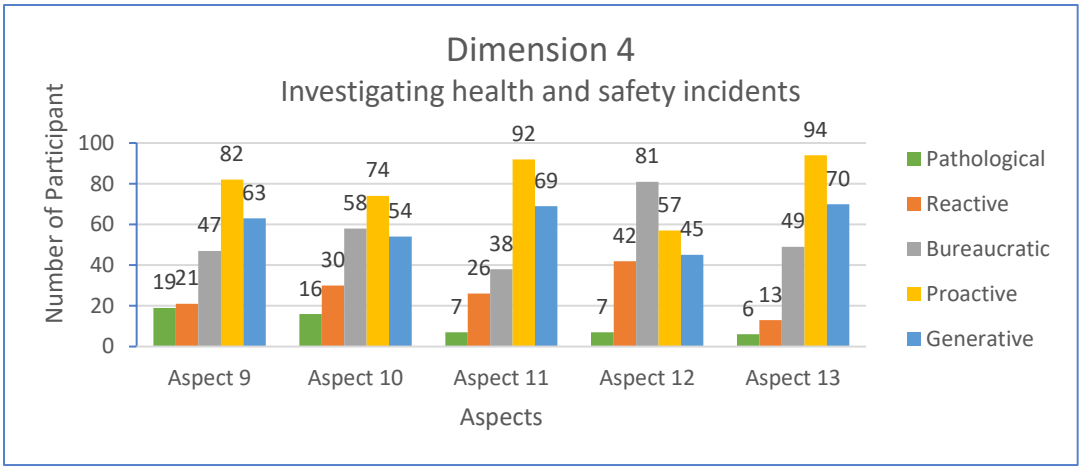


Figure 4.13. Responds-Dimension 4-Company B

Dimension 5 was "**organizational learning following a safety incident**" and it includes 2 different aspects, hence 2 different questions. The overall answers of workers from Company B are given in the Table 4.17.

As can be seen in Table 4.17, The most of the participants classified Company B as Proactive (43.1%), in terms of Aspect 14, which is "**learning from safety incidents**", and it is followed by Generative (26.7%), Bureaucratic (19.0%), Reactive (9.5%) and Pathological (1.7%). The distribution of Aspect 15, which is "**change management**", mainly shows Proactive (37.1%), and it is followed by Bureaucratic level (28.0%), Reactive (20.3%) Generative (9.1%) and Pathological (5.6%). Graphical presentation of the responses of the aspects under dimension 5 is given in the Figure 4.14.

Table 4.17. Responds-Dimension 5-Company B

Responds	**Pathological**		**Reactive**		**Bureaucratic**		**Proactive**		**Generative**	
	N	%	N	%	N	%	N	%	N	%
Aspect 14 Learning from safety incidents	4	1.7	22	9.5	44	19.0	100	43.1	62	26.7
Aspect 15 Change management	13	5.6	47	20.3	65	28.0	86	37.1	21	9.1

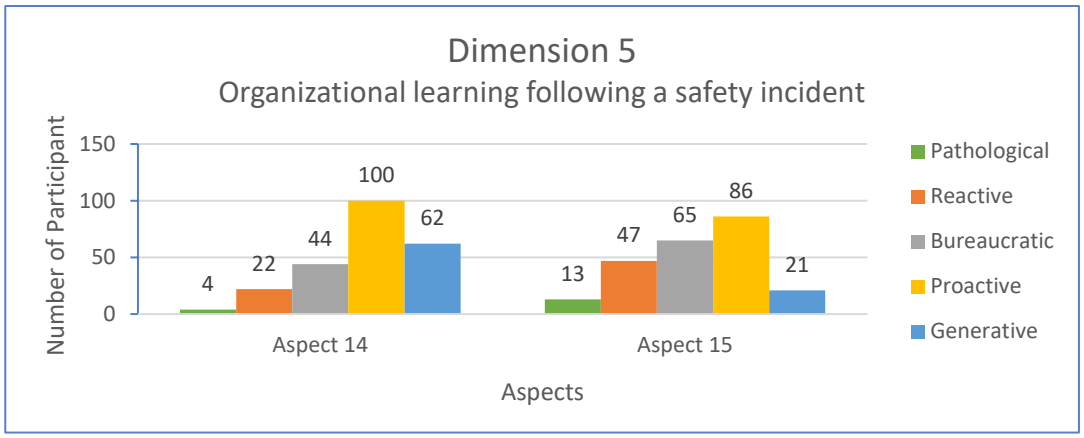


Figure 4.14. Responds-Dimension 5-Company B

Dimension 6 was "**communication about safety issues**" and it includes 2 different aspects, hence 2 different questions. The overall answers of workers from Company B are given in the Table 4.18.

Table 4.18. Responds-Dimension 6-Company B

Responds	**Pathological**		**Reactive**		**Bureaucratic**		**Proactive**		**Generative**	
	N	%	N	%	N	%	N	%	N	%
Aspect 16 Information flow	12	5.2	16	6.9	66	28.4	63	27.2	75	32.3
Aspect 17 Safety communication	19	8.2	30	12.9	57	24.6	69	29.7	57	24.6

As can be seen in Table 4.18, most of the participants classified Company B as Generative (32.3%) in terms of Aspect 16, which is "**information flow**", and it is followed by Bureaucratic (28.4%), Proactive (27.3%), Reactive (6.9%) and Pathological (5.2%). The distribution of Aspect 17, which is "**safety communication**", mainly shows Proactive (29.7%), and it is followed by Generative (24.6%) and Bureaucratic (24.6%) and Reactive (12.9%) and Pathological (8.2%). Graphical presentation of the responses of the aspects under dimension 6 is given in the Figure 4.15.

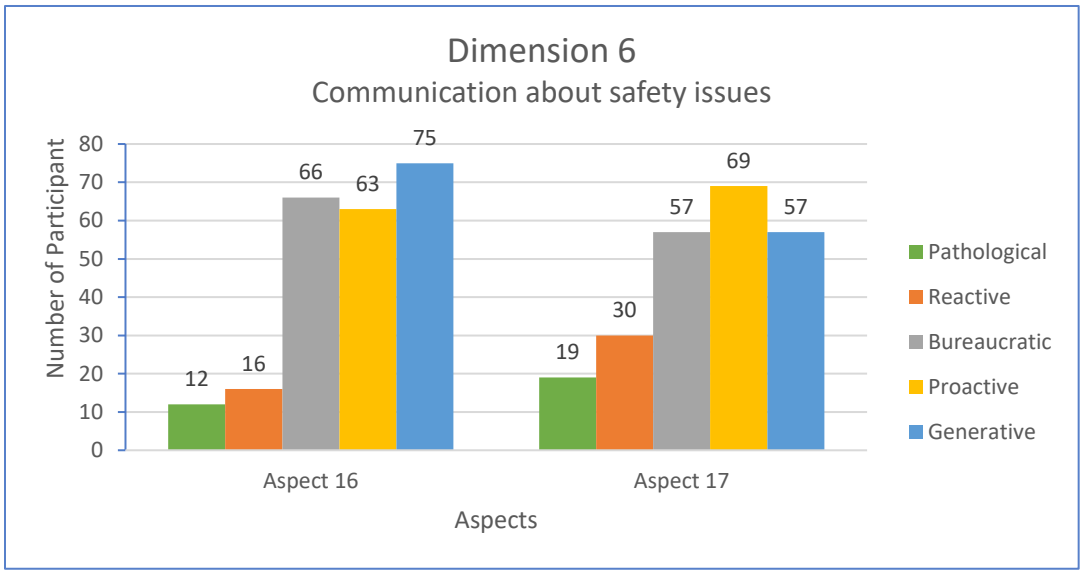


Figure 4.15. Responds-Dimension 6-Company B

Dimension 7 was "***personnel management and safety issues***" and it includes 3 different aspects, hence 3 different questions. The overall answers of workers from Company B are given in the Table 4.19. below.

Table 4.19. Responds-Dimension 7-Company B

Responds	**Pathological**		**Reactive**		**Bureaucratic**		**Proactive**		**Generative**	
	N	%	N	%	N	%	N	%	N	%
Aspect 18 Do the staffs feel supported?	5	2.2	40	17.2	70	30.2	70	30.2	47	20.3
Aspect 19 Work description/recruitment/ performance evaluation	23	9.9	16	6.9	42	18.1	100	43.1	51	22.0
Aspect 20 Wellbeing	43	18.5	49	21.1	67	28.9	38	16.4	35	15.1

As can be seen in Table 4.19, most of the participants classified Company B as Proactive (30.2%) and Bureaucratic (30.2%), in terms of Aspect 18, which is "**do the staffs feel supported?**", and it is followed by Generative (20.3%), Reactive (17.2%) and Pathological (2.2%).

The distribution of Aspect 19, which is "**work description/recruitment/ performance evaluation**", mainly shows by Proactive (43.1%), and it is followed by Generative level (22.0%), Bureaucratic (18.1%), Pathological (9.9%) and Reactive (6.9%).

The majority of the participants classified Company B as Bureaucratic (28.9%), in terms of Aspect 20, which is "**wellbeing**", and it is followed by Reactive (21.1%), Pathological (18.5), Proactive (16.4%) and Generative (15.1%) and. Graphical presentation of the responses of the aspects under dimension 7 is given in the Figure 4.16.

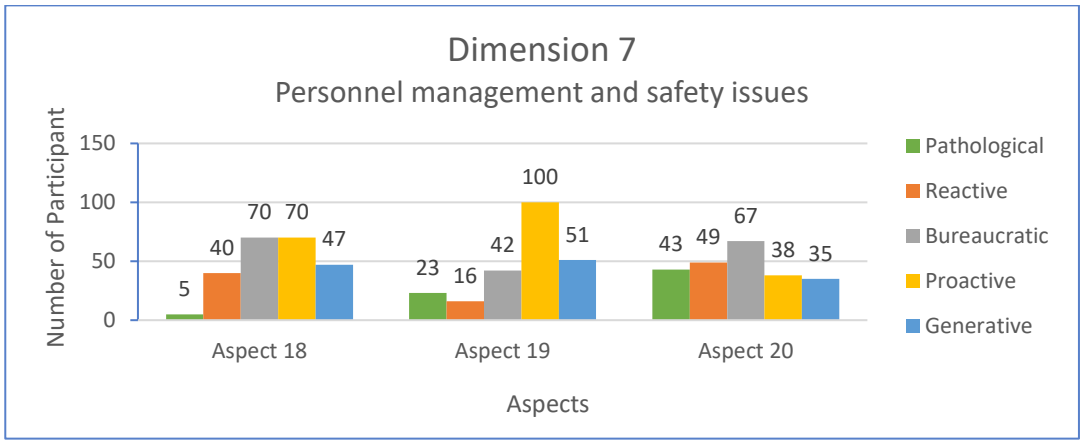


Figure 4.16. Responds-Dimension 7-Company B

Dimension 8 was "***staff education and training about safety issues***" and it includes 3 different aspects, hence 3 different questions. The overall answers of workers from Company B are given in the Table 4.20.

Table 4.20. Responds-Dimension 8-Company B

Responds	**Pathological**		**Reactive**		**Bureaucratic**		**Proactive**		**Generative**	
	N	%	N	%	N	%	N	%	N	%
Aspect 21 Training implementation	2	0.9	60	25.9	81	34.9	43	18.5	46	19.8
Aspect 22 Management approach to safety trainings	4	1.7	28	12.1	88	37.9	72	31.0	40	17.2
Aspect 23 Training needs identification	40	17.2	60	25.9	60	25.9	52	22.4	20	8.6

As can be seen in Table 4.20, the majority of the participants classified Company B as Bureaucratic (34.9%), in terms of Aspect 21, which is "**training implementation**", and it is followed by Reactive (25.9%), Generative (19.8%), Proactive (18.5%), and Pathological (0.9%). The distribution of Aspect 22, which is "**management approach to safety trainings**", mainly shows Bureaucratic level (37.9%), and it is followed by Proactive (31.0%) Generative level (17.2%), Reactive (12.1%), and Pathological (1.7%). The majority of the participants classified Company B as Bureaucratic (25.9%) and Reactive (25.9%) in terms of Aspect 23, which is "**training needs identification**", and it is followed by Proactive (22.4%), Pathological (17.2%), and Generative (8.6%). Graphical presentation of the responses of the aspects under dimension 8 is given in the Figure 4.17.

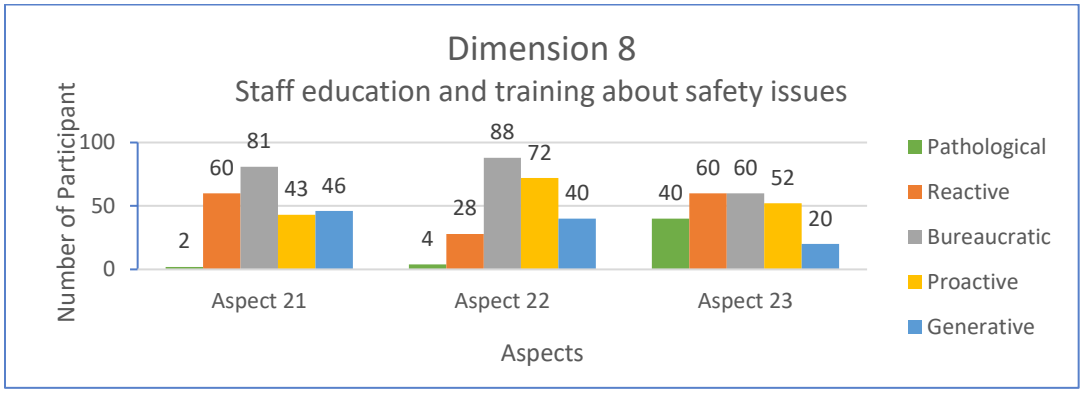


Figure 4.17. Responds-Dimension 8-Company B

Dimension 9 was "***team working around safety issues***" and it includes 2 different aspects, hence 2 different questions. The overall answers of workers from Company B are given in the Table 4.21.

Table 4.21. Responds-Dimension 9-Company B

Responds	**Pathological**		**Reactive**		**Bureaucratic**		**Proactive**		**Generative**	
	N	%	N	%	N	%	N	%	N	%
Aspect 24 Team structure	46	19.8	38	16.4	59	25.4	46	19.8	43	18.5
Aspect 25 The role of team member/ engagement	67	28.9	42	18.1	43	18.5	37	15.9	43	18.5

As can be seen in Table 4.21, the majority of the participants classified Company B as Bureaucratic (25.4%) in terms of Aspect 24, which is "**team structure**", and it is followed by Proactive (19.8%) and Pathological (19.8%), Generative (18.5%) and Reactive (16.4%). The distribution of Aspect 25, which is "**the role of team member/ engagement**", mainly shows Pathological level (28.9%) and it is followed by Bureaucratic (18.5%) and Generative levels (18.5%), and Reactive (18.1%), Proactive (15.9%). Graphical presentation of the responses of the aspects under dimension 9 is given in the Figure 4.18.

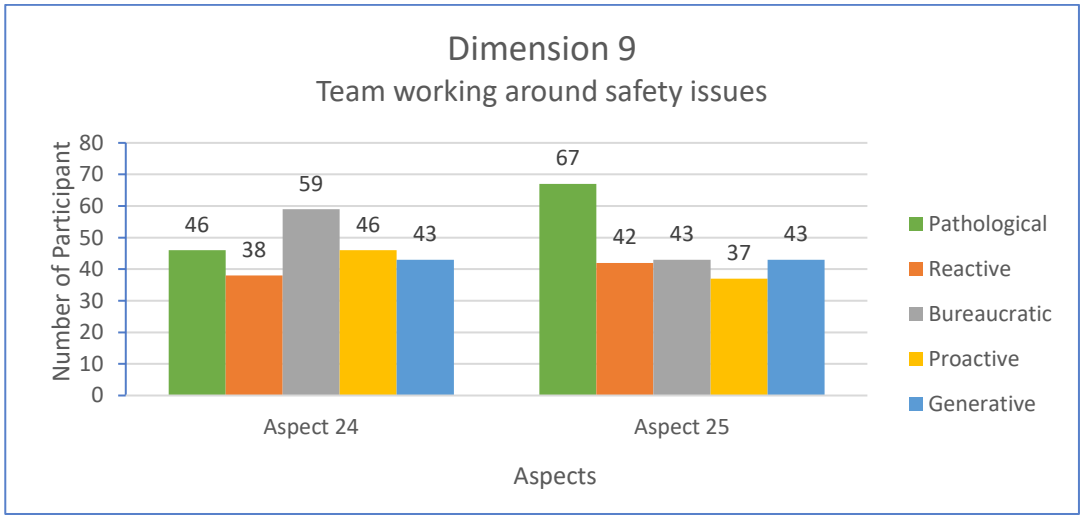


Figure 4.18. Responds-Dimension 9-Company B

4.5. Results

As a conclusion, compression of the average result of the aspects based on the companies is presented in this section. In order to calculate mathematical averages, A to E scale in the answers were scored as 1 to 5. In this numerical scale, answer A *i.e.* Pathological level corresponds score 1; answer B *i.e.* Reactive level corresponds score 2; answer C *i.e.* Bureaucratic level corresponds score 3; answer D *i.e.* Proactive level corresponds score 4; answer E *i.e.* Generative level corresponds score 5.

The overall average points of the aspects and dimensions for Company A are given in the Table 4.22

Table 4.22. Average point for aspects and dimensions-Company A

Aspects	Average Points	Dimensions	Average Points
Aspect 1 Commitment to continuous improvement about safety	4.45	Dimension 1: Commitment to overall continuous improvement about safety	4.44
Aspect 2 Inspection / audit	4.54		
Aspect 3 Written Policies and procedures	4.30		
Aspect 4 Management commitment	4.49		
Aspect 5 Priority given to safety	4.25	Dimension 2: Priority given to safety	4.44
Aspect 6 Safety related responsibilities	4.62		
Aspect 7 Risk management	4.45		
Aspect 8 Blame culture	4.29	Dimension 3: Perceptions of the causes of safety incidents	4.29
Aspect 9: Reporting system and its usage	4.39	Dimension 4: Investigating health and safety incidents	4.19
Aspect 10: Staff feeling on reporting	3.88		
Aspect 11: Focus of investigation /investigation system	4.20		
Aspect 12: Who is doing the investigations?	4.04		
Aspect 13: Results of investigation	4.42		
Aspect 14 Learning from safety incidents	4.25	Dimension 5: Organizational learning following a safety incident	4.00
Aspect 15 Change management	3.75		
Aspect 16 Information flow	4.34	Dimension 6: Communication about safety issues	4.20
Aspect 17 Safety communication	4.06		
Aspect 18 Do the staffs feel supported?	3.99	Dimension 7: Personnel management and safety issues	4.12
Aspect 19 Work description/recruitment/ performance evaluation	4.36		
Aspect 20 Wellbeing	4.02		
Aspect 21 Training implementation	4.36	Dimension 8: Staff education and training about safety issues	4.11
Aspect 22 Management approach to safety trainings	4.16		
Aspect 23 Training needs identification	3.80		
Aspect 24 Team structure	4.32	Dimension 9: Team working around safety issues	4.28
Aspect 25 The role of team member/ engagement	4.24		

For Company A, the highest scores are gathered for dimension 1 (commitment to overall continuous improvement about safety) and dimension 2 (priority given to safety), which is 4.44 for both dimensions.

There is no score calculated under 4 for any dimension for Company A. The lowest score is gathered for dimension 5 (organizational learning following a safety incident), which is 4.0. The overall average points of the aspects and dimensions for Company A are given in the Table 4.22 and the graphical presentation of each aspect under each dimension is given in the following figures.

As can be seen in Figure 4.19, for the dimension 1, the highest score is gathered for ***aspect 2: inspection / audit*** and the lowest score is gathered for a***spect 3: written policies and procedures***. The overall scores of the aspects show that most of the participants classified Company A in generative level for 3 aspects (namely 1, 2, and 4), however for ***written policies and procedures aspect***, 156 participants categorized Company A as Proactive, which is more than the ones who categorized Company A as Generative (154 participant) (Figure 4.1).

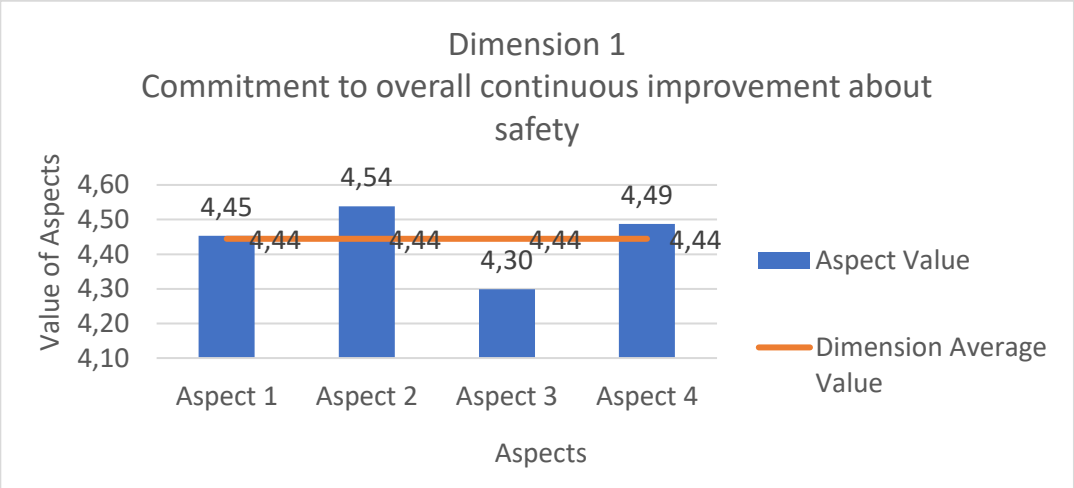


Figure 4.19. Average point for dimension 1 and its aspects-Company A

As can be seen in Figure 4.20, for the dimension 2 the highest score is gathered for ***aspect 6: Safety related responsibilities*** and the lowest score is gathered for ***aspect 5: Priority given to safety*** for dimension 2. The overall scores of the aspects show

that most of the participants classified Company A in generative level for all 3 aspects (Figure 4.2).

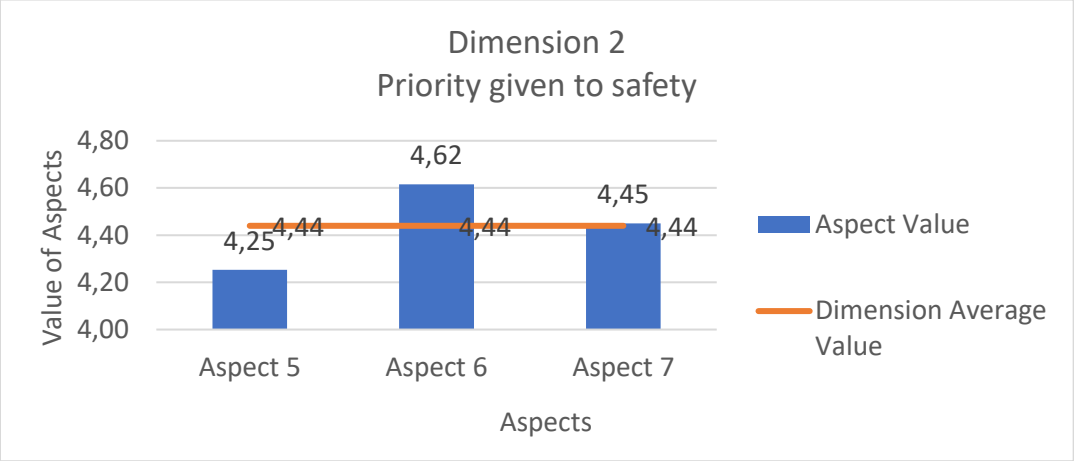


Figure 4.20. Average point for dimension 2 and its aspects-Company A

As can be seen in Figure 4.21, for the dimension 3, the majority of the participants classified Company A in generative level and the overall score is 4.29.

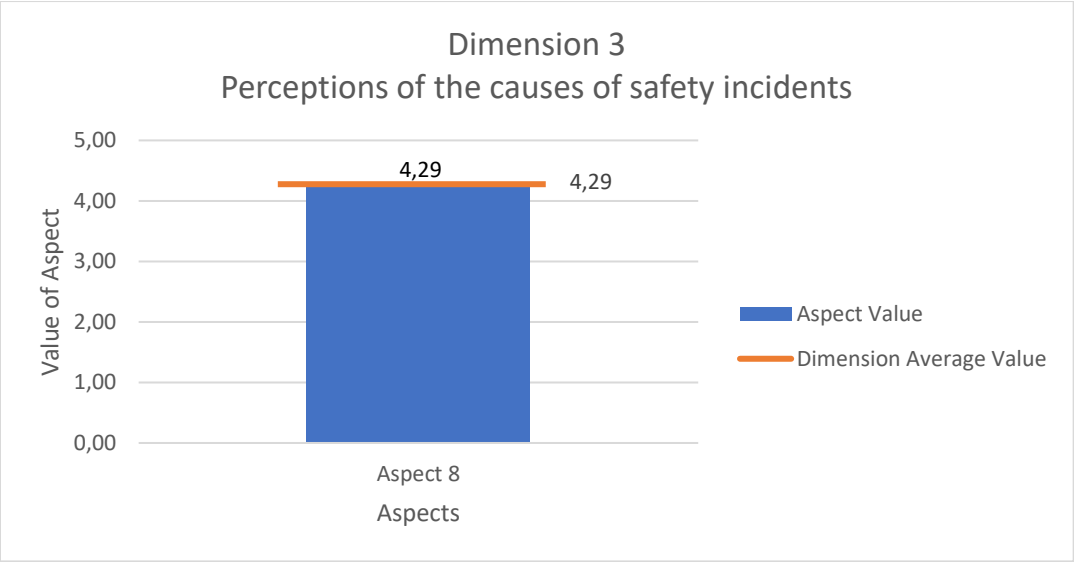


Figure 4.21. Average point for dimension 3 and its aspect-Company A

As can be seen in Figure 4.22, for the dimension 4 the highest score is gathered for ***aspect 13: results of investigation*** and the lowest score is gathered for a***spect 10: staff feeling on reporting*** for dimension 4. The overall scores of the aspects show that most of the participants classified Company A in generative level for 3 aspects

(namely 9, 12 and 13), however for ***aspect 10: staff feeling on reporting*** and ***aspect 11: focus of investigation /investigation system***, most of the participants categorized Company A as Proactive (Figure 4.4).

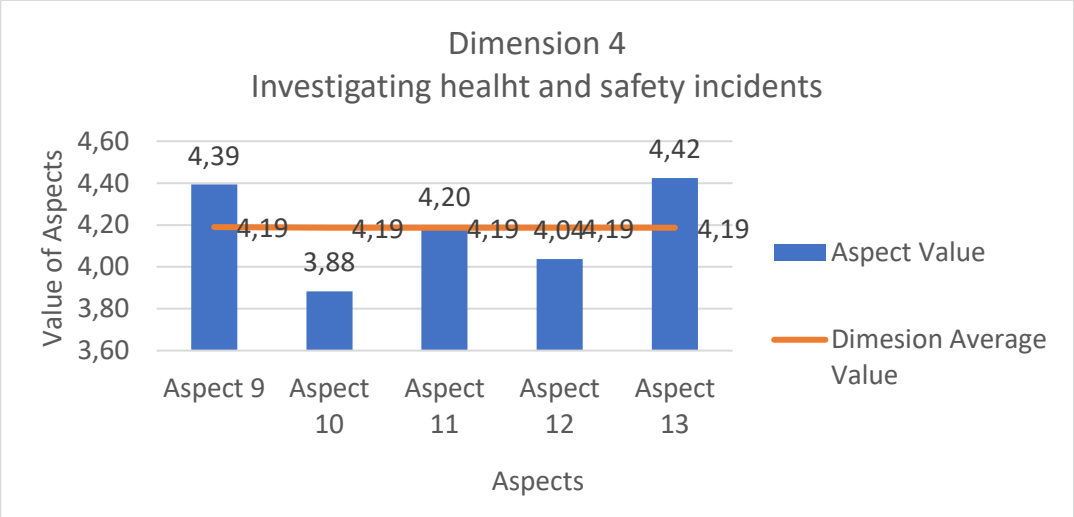


Figure 4.22. Average point for dimension 4 and its aspects-Company A

As can be seen in Figure 4.23, for the dimension 5 the highest score is gathered for ***aspect 14: learning from safety incidents*** and the lowest score is gathered for a***spect 15: change management*** for dimension 5. The overall score of the aspect 14 shows that most of the participants classified Company A in generative level (152 participants), however for aspect 15, 134 participants categorized Company A as Proactive, which is more than the ones who categorized Company A as Generative (83 participant) (Figure 4.5).

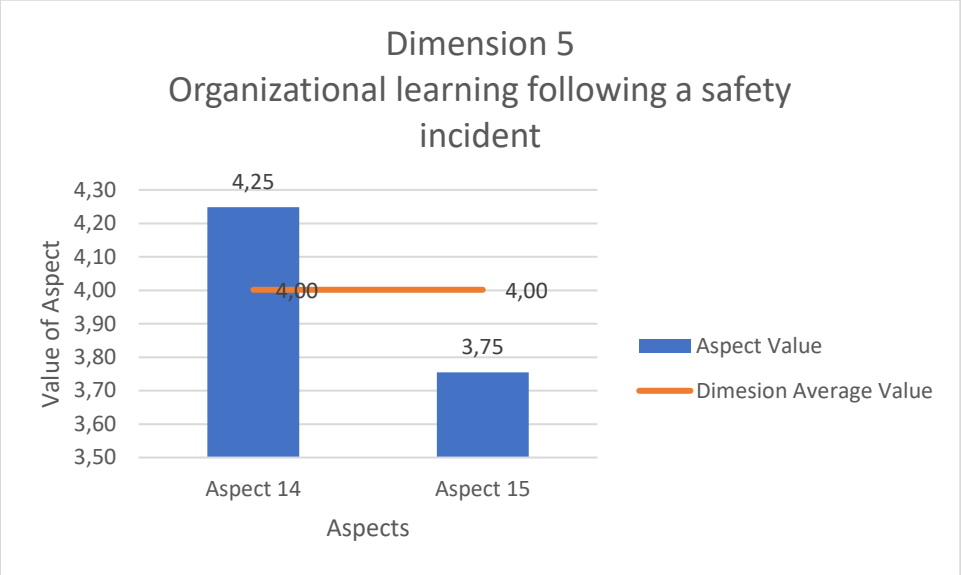


Figure 4.23. Average point for dimension 5 and its aspects-Company A

As can be seen in Figure 4.24, for the dimension 6 the highest score is gathered for ***aspect 16 information flow*** and the lowest score is gathered for a***spect 17: safety communication*** for dimension 6. The overall scores of the aspects show that most of the participants classified Company A in generative level for both of these 2 aspects (Figure 4.6).

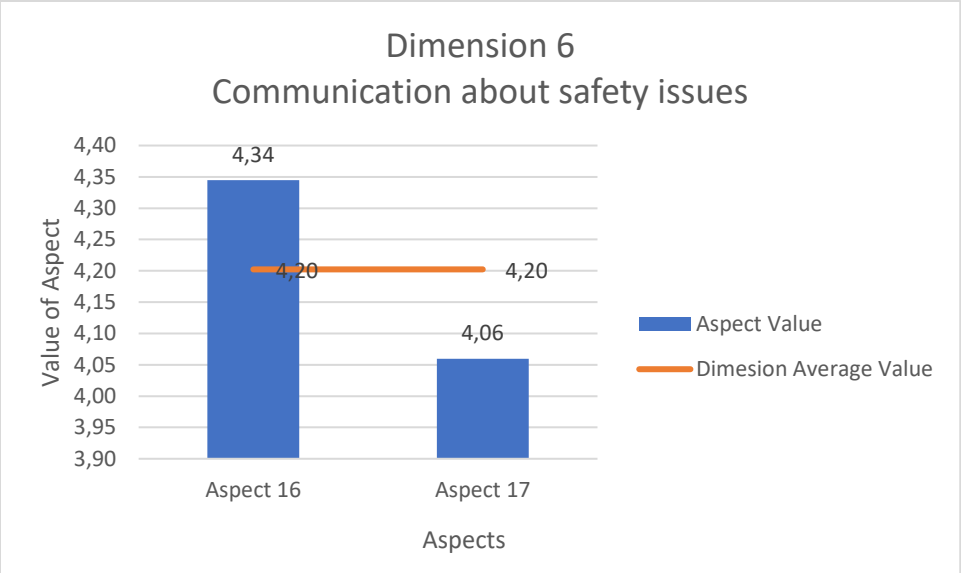


Figure 4.24. Average point for dimension 6 and its aspects-Company A

As can be seen in Figure 4.25, for the dimension 7 the highest score is gathered for ***aspect 19: work description/recruitment/ performance evaluation*** and the lowest score is gathered for a***spect 18: do the staffs feel supported?*** for dimension 7. The overall scores of the aspects show that most of the participants classified Company A in generative level for 3 aspects (namely 18, 19 and 20), however for aspect 18, the number of the participants who categorized Company A as Generative and Proactive level is very close (130 and 125, respectively) (Figure 4.7).

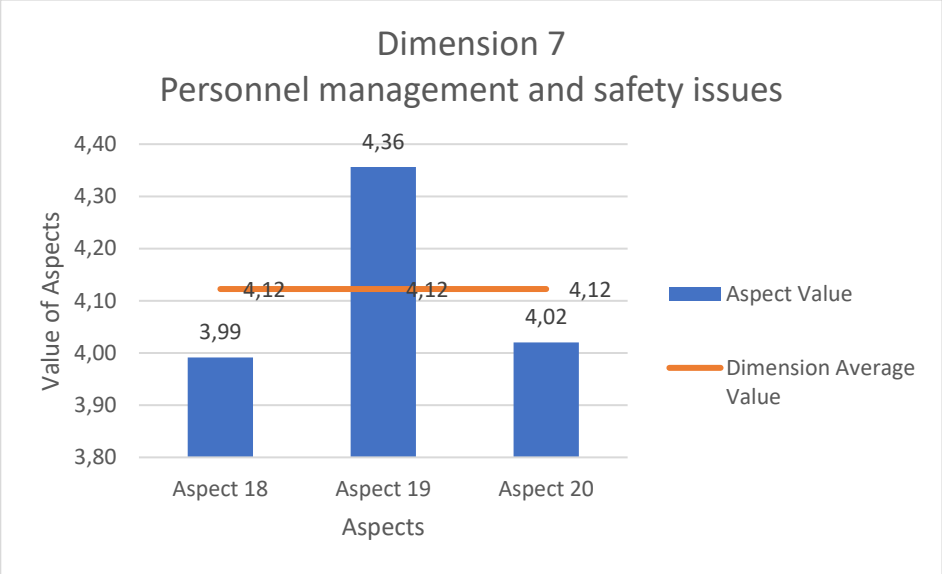


Figure 4.25. Average point for dimension 7 and its aspects-Company A

As can be seen in Figure 4.26, for the dimension 8 the highest score is gathered for ***aspect 21: training implementation*** and the lowest score is gathered for a***spect 23: training needs identification*** for dimension 8.

The overall scores of the aspects show that most of the participants classified Company A in generative level for 2 aspects (namely 21 and 22), however for **a*spect 23***, 147 participants categorized Company A as Proactive, which is more than the ones who categorized Company A as Generative (95 participant) and also for aspect 22, the number of the participants who categorized Company A as Generative and Proactive level is very close (140 and 135, respectively) (Figure 4.8).

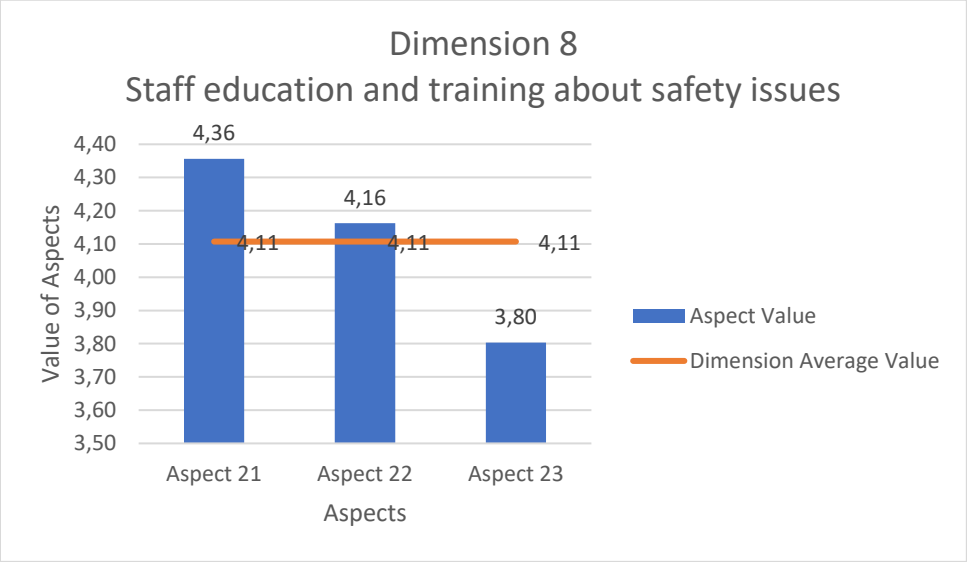


Figure 4.26. Average point for dimension 8 and its aspects-Company A

As can be seen in Figure 4.27, for the dimension 9 the highest score is gathered for ***aspect 24: team structure*** and the lowest score is gathered for a***spect 25: the role of team member/ engagement*** for dimension 9. The overall scores of the aspects show that most of the participants classified Company A in generative level for both of these 2 aspects (namely 24 and 25) (Figure 4.9).

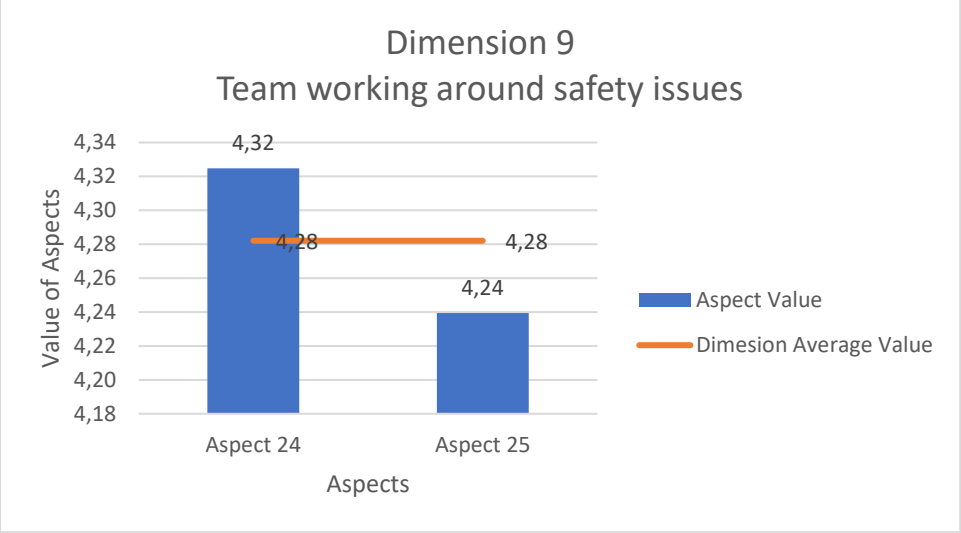


Figure 4.27. Average point for dimension 9 and its aspects-Company A

For Company B average scores are given in the Table 4.23. For Company B the highest score is gathered for dimension 2 (priority given to safety), which is 4.11. The lowest score is gathered for dimension 9 (team working around safety issues), which is 2.89. The overall average points of the aspects and dimensions for Company B are given in the Table 4.23.

Table 4.23. Average point for aspects and dimensions-Company B

Aspects	**Average Points**	**Dimensions**	**Average Points**
Aspect 1 Commitment to continuous improvement about safety	4.03	Dimension 1: Commitment to overall continuous improvement about safety	3.94
Aspect 2 Inspection / audit	3.91		
Aspect 3 Written Policies and procedures	3.93		
Aspect 4 Management commitment	3.88		
Aspect 5 Priority given to safety	3.80	Dimension 2: Priority given to safety	4.11
Aspect 6 Safety related responsibilities	4.47		
Aspect 7 Risk management	4.07		
Aspect 8 Blame culture	3.87	Dimension 3: Perceptions of the causes of safety incidents	3.87
Aspect 9: Reporting system and its usage	3.64	Dimension 4: Investigating health and safety incidents	3.65
Aspect 10: Staff feeling on reporting	3.52		
Aspect 11: Focus of investigation /investigation system	3.82		
Aspect 12: Who is doing the investigations?	3.39		
Aspect 13: Results of investigation	3.90		
Aspect 14 Learning from safety incidents	3.84	Dimension 5: Organizational learning following a safety incident	3.54
Aspect 15 Change management	3.24		
Aspect 16 Information flow	3.75	Dimension 6: Communication about safety issues	3.62
Aspect 17 Safety communication	3.50		

Table 4.23. Average point for aspects and dimensions-Company B (Cont'ed.)

Aspects	Average Points	Dimensions	Average Points
Aspect 18 Do the staffs feel supported?	3.49	Dimension 7: Personnel management and safety issues	3.32
Aspect 19 Work description/recruitment/ performance evaluation	3.60		
Aspect 20 Wellbeing	2.88		
Aspect 21 Training implementation	3.31	Dimension 8: Staff education and training about safety issues	3.20
Aspect 22 Management approach to safety trainings	3.50		
Aspect 23 Training needs identification	2.79		
Aspect 24 Team structure	3.01	Dimension 9: Team working around safety issues	2.89
Aspect 25 The role of team member/ engagement	2.77		

As can be seen in Figure 4.28, for dimension 1 the highest score is gathered for ***aspect 1: commitment to continuous improvement about safety*** and the lowest score is gathered for ***aspect 4: management commitment***.

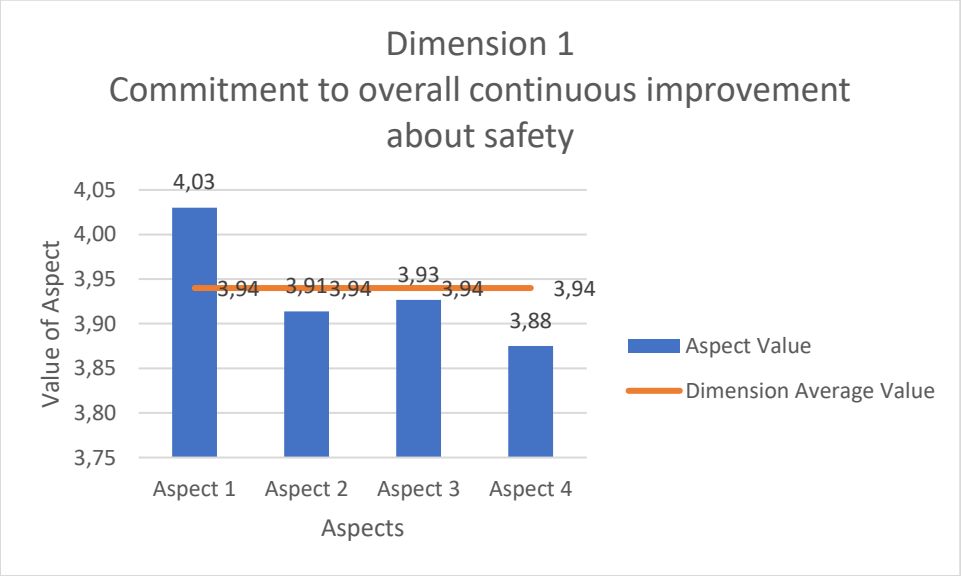


Figure 4.28. Average point for dimension 1 and its aspects-Company B

As can be seen in Figure 4.29, for dimension 2 the highest score is gathered for ***aspect 6: Safety related responsibilities*** and the lowest score is gathered for ***aspect 5: Priority given to safety for*** dimension 2. The overall scores of the aspects show that

most of the participants classified Company B in generative level for all 3 aspects (Figure 4.11).

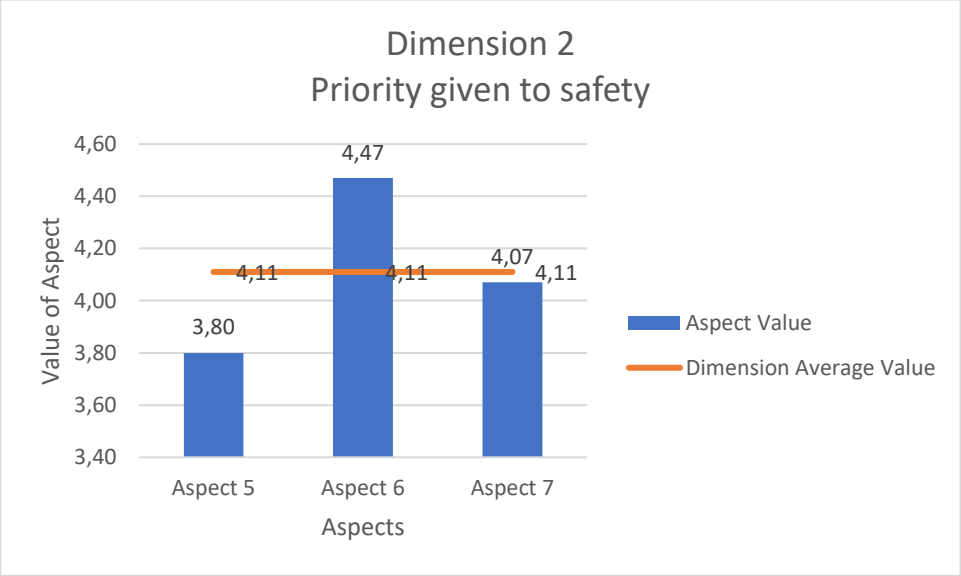
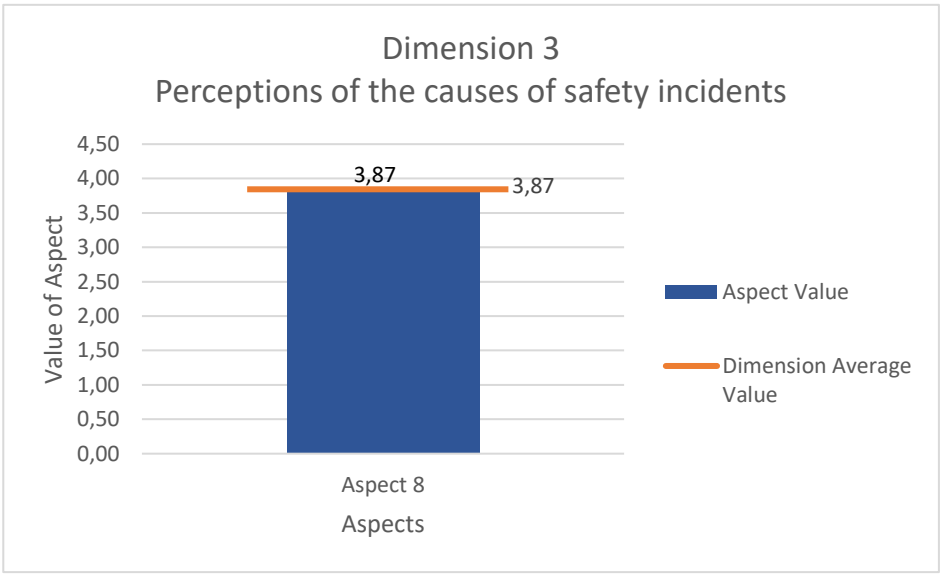


Figure 4.29. Average point for dimension 2 and its aspects-Company B

As can be seen in Figure 4.30, the overall score is 3.87 for aspect 8 for dimension 3.



As can be seen in Figure 4.31, for the dimension 4 the highest score is gathered for ***aspect 13: results of investigation*** and the lowest score is gathered for ***aspect 12: Who is doing the investigations?*** (Figure 4.13).

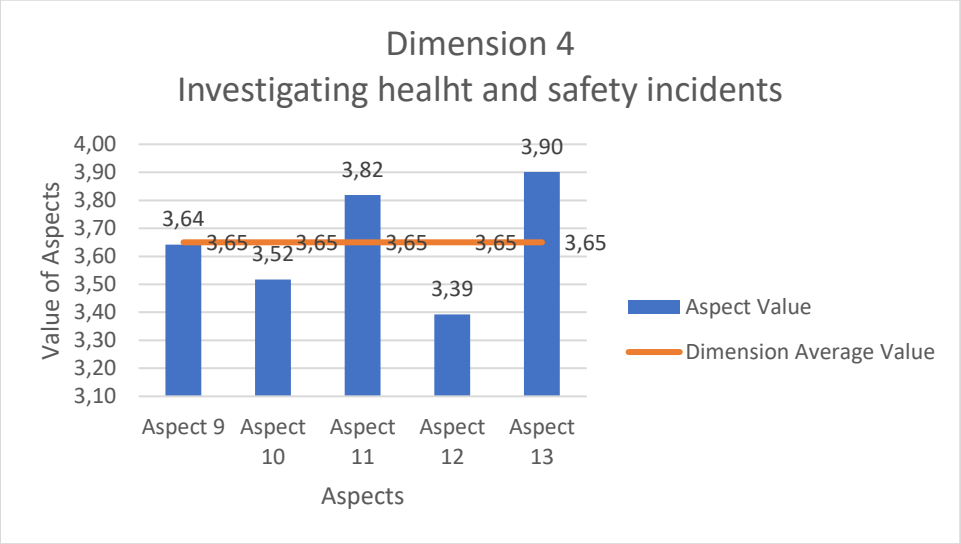


Figure 4.31. Average point for dimension 4 and its aspects-Company B

As can be seen in Figure 4.32, for the dimension 5 the highest score is gathered for ***aspect 14: learning from safety incidents*** and the lowest score is gathered for **aspect *15: change management*** .The overall score of the aspect 14 shows that most of the participants classified Company B in Proactive level (100 participants), for aspect 15, 86 participants categorized Company B as Proactive and 65 participants categorized Company B as Bureaucratic, and 47 participants categorized Company B as Reactive, which is more than the ones who categorized Company B as Generative (22 participant) (Figure 4.14).

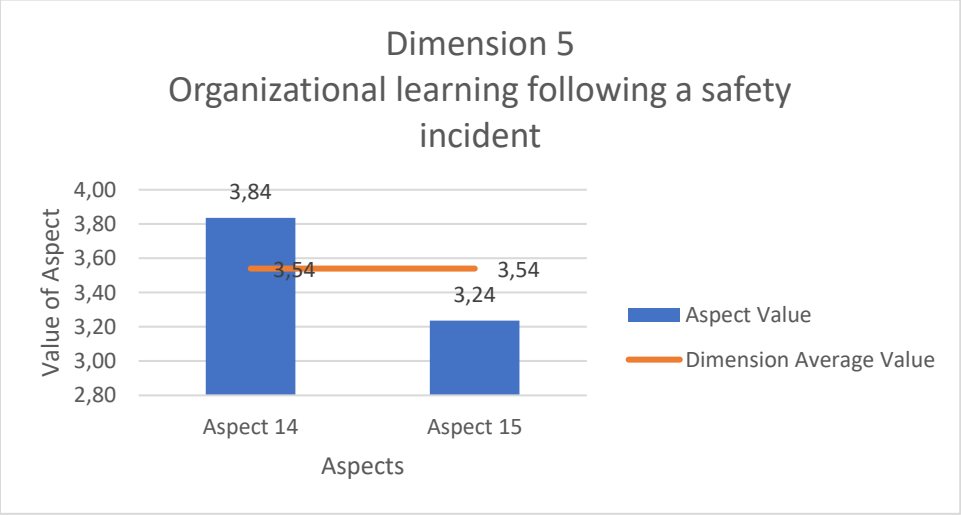


Figure 4.32. Average point for dimension 5 and its aspects-Company B

As can be seen in Figure 4.33, for the dimension 6 the highest score is gathered for ***aspect 16: information flow*** and the lowest score is gathered for **a*spect 17: safety communication***. The overall scores of the aspects show that most of the participants classified Company B in generative level for aspect 16 and proactive level for aspect 17 (Figure 4.15).

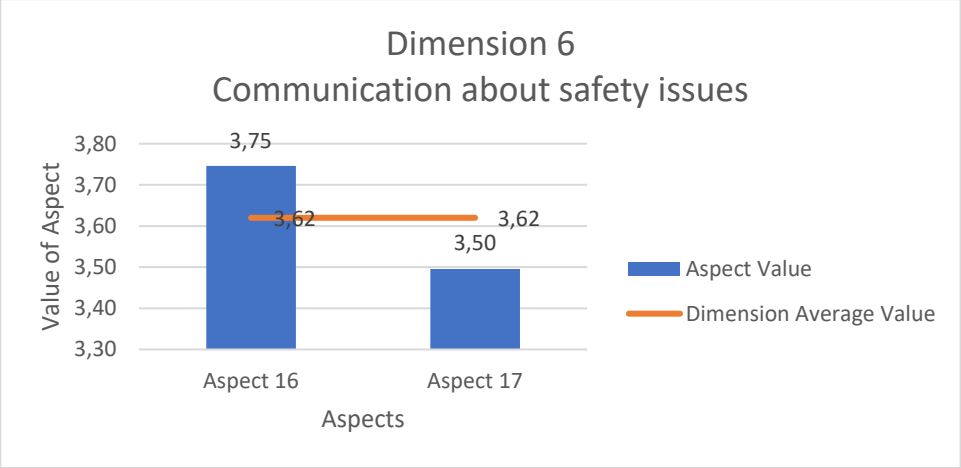


Figure 4.33. Average point for dimension 6 and its aspects-Company B

As can be seen in Figure 4.34, for the dimension 7 the highest score is gathered for ***aspect 19: work description/recruitment/ performance evaluation*** and the lowest score is gathered for **a*spect 20: well-being*** The overall scores of the aspects show that most of the participants classified Company B in proactive level for aspect 19 and Bureaucratic level for aspect 20 (Figure 4.16).

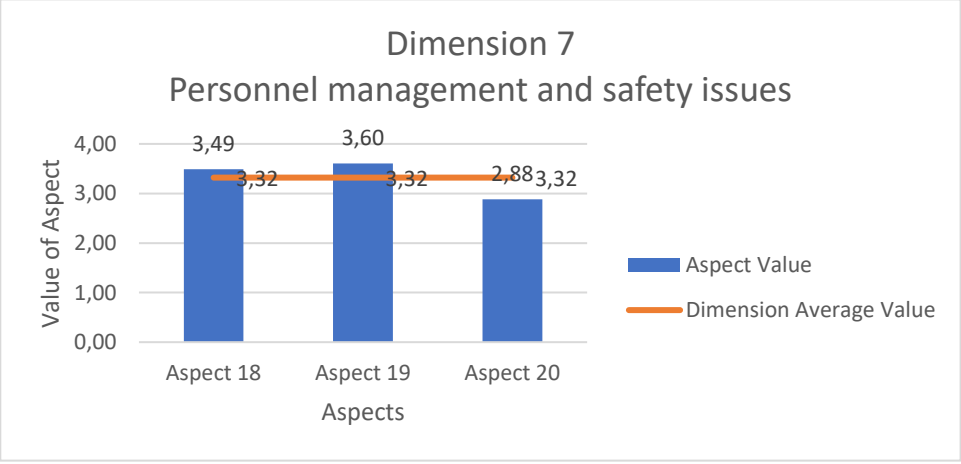


Figure 4.34. Average point for dimension 7 and its aspects-Company B

As can be seen in Figure 4.35, for the dimension 8 the highest score is gathered for ***aspect 22: management approach to safety trainings*** and the lowest score is gathered for **a*spect 23: training needs identification***. The overall scores of the aspects show that most of the participants classified Company B in bureaucratic level for all 3 aspects (Figure 4.17).

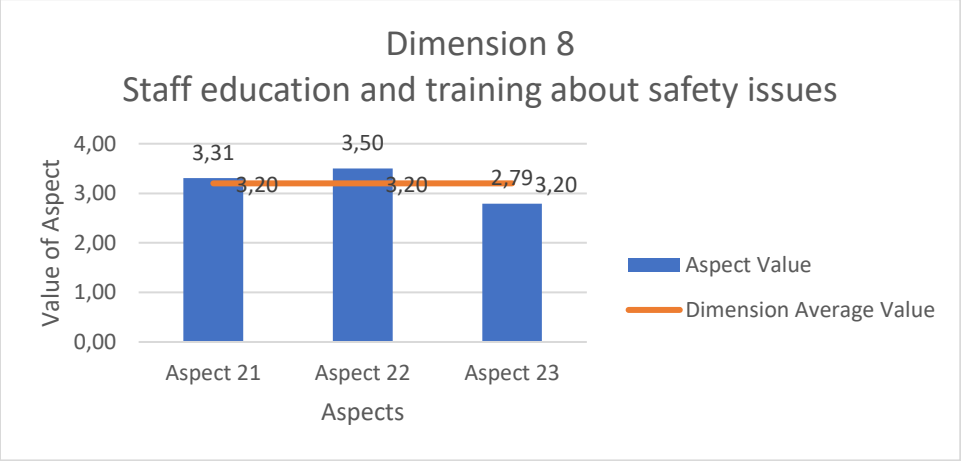


Figure 4.35. Average point for dimension 8 and its aspects-Company B

As can be seen in Figure 4.36, for the dimension 9 the highest score is gathered for ***aspect 24: team structure*** and the lowest score is gathered for **a*spect 25: the role of team member/ engagement***. The overall scores of the aspects show that most of the participants classified Company B in bureaucratic level for aspect 24 and pathological level for aspect 25 (see Figure 4.18).

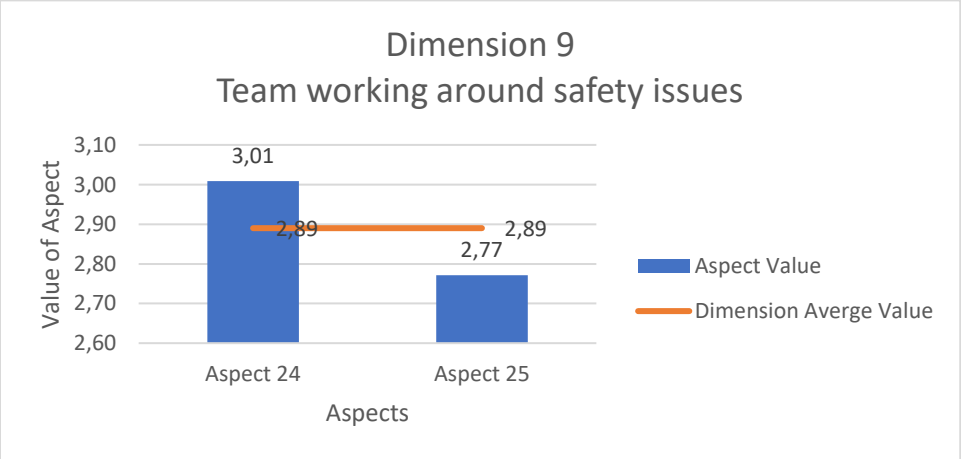


Figure 4.36. Average point for dimension 9 and its aspects-Company B

CHAPTER 5

COMPARISON OF THE COMPANIES AND DISCUSSION OF THE RESULTS

5.1. Introduction

Overall comparison of the average points gathered for each dimension for Company A and Company B is presented in the Figure 5.1. As you can see from the Figure 5.1, Company A has more points in each dimension compared to the Company B.

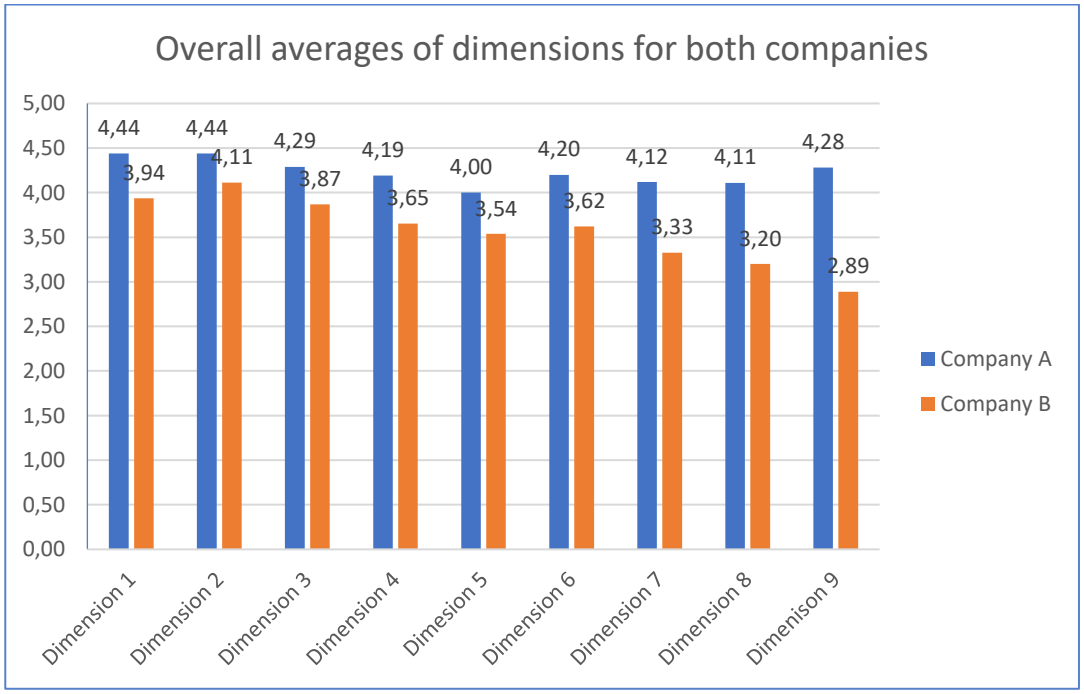


Figure 5.1. Average points gathered for each dimension for Company A and Company B

The largest difference is seen in Dimension 9, which is "***team working around safety issues",*** and the closest points are gathered for ***dimension 2: priority given to safety.***

5.2. Dimension 1

The comparison of the Company A and Company B in terms of aspect 1 named as ***commitment to continuous improvement about safety*** under dimension 1, which is ***commitment to overall continuous improvement about safety***, is given in the Figure 5.2.

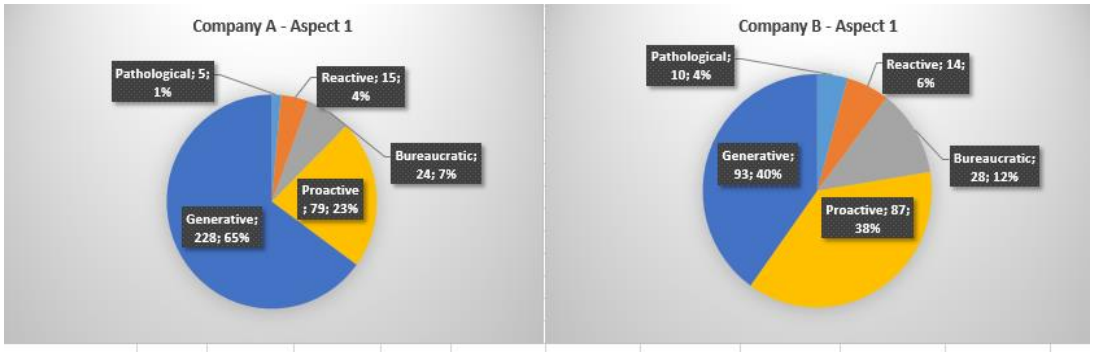


Figure 5.2. Comparison in terms of aspect 1

As can be seen in Figure 5.2, participants classified both companies in Generative level. Although there are some differences related to the percentages of proactive level, the sum of the generative and proactive level ratios is very close to each other (78.7% for Company A and 77.6% for Company B). BBS approach does not lead to significant difference in this aspect because both BBS and traditional approaches carry continuous improvement. Regardless of the approaches, participants assess this aspect based on resources (time) and budget perspective and these concepts are important for both BBS and the traditional approach.

It is important to note that the BBS approach is not a substitute for an already existing health and safety program; BBS is an additional tool to increase the effect of existing applications and allow an objective measurement system (HSA, 2013).

The comparison of the Company A and Company B in terms of aspect 2 named as ***inspection/ audit*** under dimension 1 is given in the Figure 5.3.

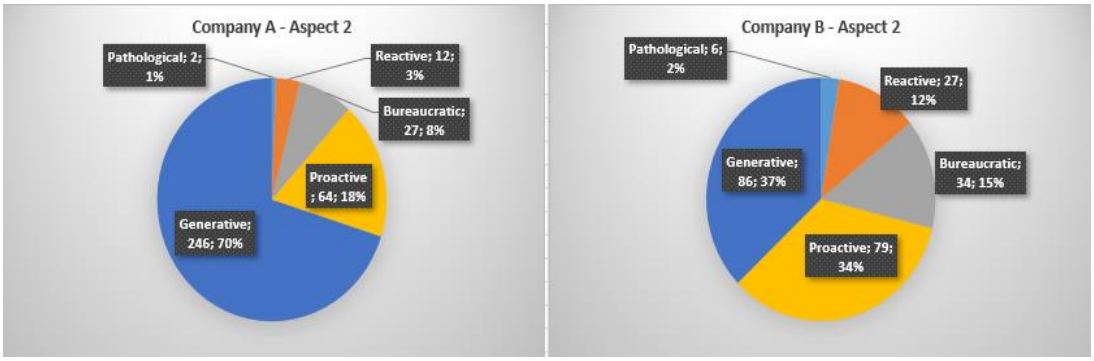


Figure 5.3. Comparison in terms of aspect 2

As can be seen in Figure 5.3, there is a significant difference observed in aspect 2. The main reason for this difference may be related to the observation program used in Company A. Audits and inspections are also carried out in traditional programs, however, they are mainly done by HS specialists with no participation from workers.

The observation program in Company A has an aim to include workers from each level to the inspection and audit processes. As mentioned in section 4.1.1; there are observation teams developed in Company A and these teams have members from all working levels in the company such as upper management, supervisors, and workers. These teams have been conducting audits and inspection for 11 years and 26 periods now. This time has led to a change in the perception of the workers in Company A in the sense that they have realized the audits are not just made by some experts or authority; but can also be done with workers from all levels of expertise.

As the results also prove, BBS is often described as a top-down supported (safety leaders), bottom-up approach (frontline employees) (HSA, 2013). Reaching a high level of safety every year requires a behavioral observation process (McSween, 2003). Workers' involvement in the observation process is a crucial feature of BBS.

The comparison of the Company A and Company B in terms of aspect 3 named as ***written policies and procedures*** under dimension 1is given in the Figure 5.4.

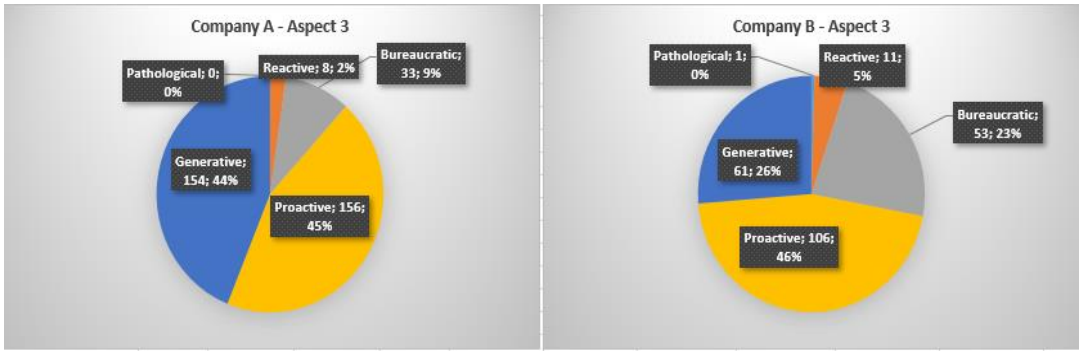


Figure 5.4. Comparison in terms of aspect 3

As can be seen in Figure 5.4, participants classified both companies in proactive level. The main reason for that may be related to the involvement of the workers in policy and procedure development processes. In the traditional approach, the important issue is having written policies and procedures and also communicating these with workers. Similarly, BBS approach also refers to the policies and procedures as they need to be available, however, it emphasizes that there is less need for a safety policy and procedures because safety has become a way of life for all workers. It does not specifically mention the involvement of the workers in policy/procedure development processes.

As the results show, both companies need to involve workers in the policy/procedure development processes in order to reach a high level of safety with implementing these policies and procedures.

The comparison of the Company A and Company B in terms of aspect 4 named as ***management commitment*** under dimension 1 is given in the Figure 5.5.

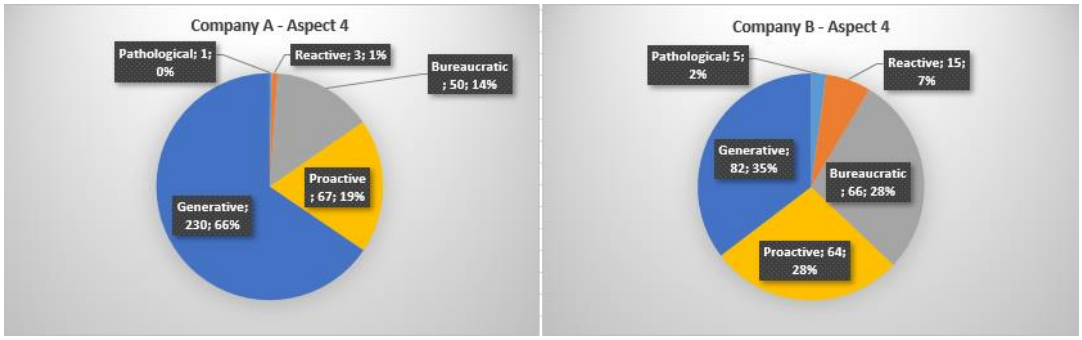


Figure 5.5. Comparison in terms of aspect 4

As can be seen in Figure 5.5, there is a significant difference between companies. Management commitment is an important item for BBS approach, and because of its awareness, the involvement of top management in safety issues within Company A is higher. In Company A, each observation period starts with a kick-off meeting organized and managed by the general manager of the company. A total of 3 "kick off meetings" is done in every year at the beginning of the observation period, and the general manager informs the observation teams on what he is expecting from this process. After the meeting, one of the departments is visited by the general manager and people from top management and a "risk discussion meeting" is held. The role of the general manager is to become an observer in this meeting and to receive workers' feedback related to the safety conditions of this department. Top management has a visible safety leadership role in company, and they are involved in site audits during the year. Apart from that, meetings called "all employee meeting" are gathered to communicate the progress in projects and they are held twice in a year. The main discussion subjects in these meetings are; budget, current status of the project and also safety. All employees of the Company A (almost 1000) are involved in these meetings twice a year and they have a chance to meet the general manager and realize his visible safety leadership.

As explained above, the process of involving top management to the safety issues in Company A is one of the main reasons of the difference shown in the result of the questionnaire.

5.3. Dimension 2

The comparison of the Company A and Company B in terms of aspect 5 named as ***priority given to safety*** under dimension 2, which is ***priority given to safety,*** is given in the Figure 5.6.

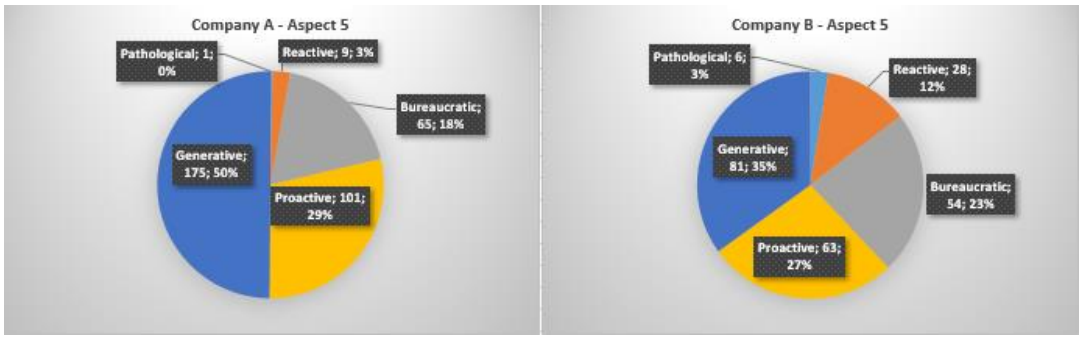


Figure 5.6. Comparison in terms of aspect 5

As can be seen in Figure 5.6, there is a significant difference between companies. Company A refers to safety as a value, however traditional approach generally treats safety as a priority. This value concept is widely discussed in the safety literature. Geller (1996) mentions that the concept of safety cannot be considered as a priority because it is too important compared to priorities. The priority can be replaced by another, but the value cannot (Geller, 1996). The term value was explained by McSween in 2003 as; value is a set of statements or rules that prescribe a culture's preferred form of personal interactions (such as behavior called “good manners”).Values serve as basic rules for people within organizations and their relationships (McSween, 2003).

Company A refers safety as a value in its mission and vision statement and because the BBS is a human-based approach, the safety concept is explained to the workers as a value in Company A in each training, seminar, meeting etc.

The comparison of the Company A and Company B in terms of aspect 6 named as ***safety related responsibilities*** under dimension 2 is given in the Figure 5.7.

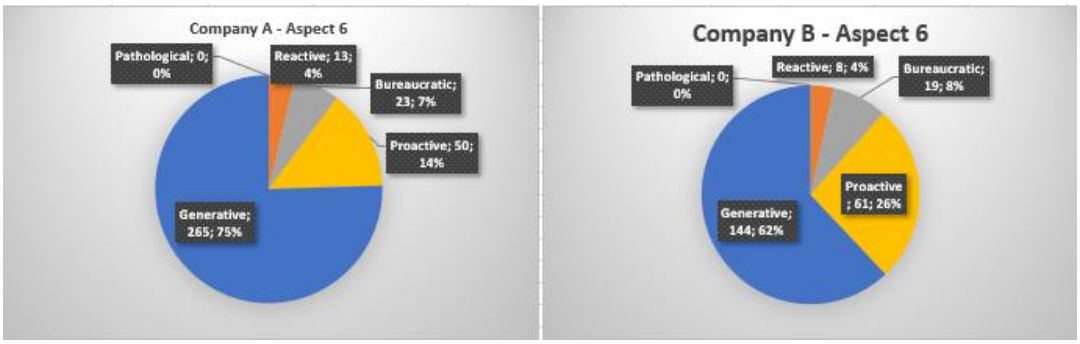


Figure 5.7. Comparison in terms of aspect 6

As can be seen in Figure 5.7, participants classified both companies in Generative level. Although there are some differences related to percentages, the sum of the generative and proactive level ratios is very close to each other (89.7% for Company A and 88.4% for Company B). The main reason why the result does not show significant difference is that both companies have an ISO 45001 certificate and one of the main requirements of this certification is to divide the responsibilities between each level in the company. Apart from ISO 45001, the main legislation about the health and safety in Turkey, which is 6331 numbered Occupation Health and Safety Law, refers to all level of workers in the company in terms of roles and responsibilities. There are detailed explanations about the roles and responsibilities of the management, HS specialists, workers' representatives and all level of workers are in this law.

The comparison of the Company A and Company B in terms of aspect 7 named as ***risk management*** under dimension 2 is given in the Figure 5.8.

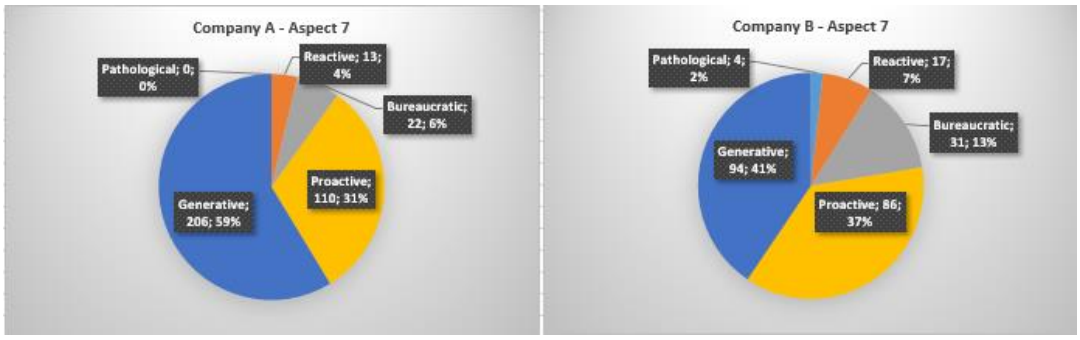


Figure 5.8. Comparison in terms of aspect 7

As can be seen in Figure 5.8, both companies are classified as generative. A comprehensive official risk assessment document is prepared by both companies each year and also renewed after each incident. The participants of the official risk assessment team are also defined in legislation and it involves the management representative, HS specialists, support staff (fire fighters, first aiders etc.) and also workers' representative. However, apart from this official process, the observation team has a great role in providing input to the risk assessment process in Company A.

The findings from observation processes are considered as inputs to the risk assessment of the departments and are included in the risk assessment documents. The observation team also has a role in giving recommendation about the actions need to be taken in order to resolve the findings, and these recommendations are communicated with the related departments and taken into consideration during the risk assessment process. This may be the reason of the percentage difference in generative level.

5.4. Dimension 3

The comparison of the Company A and Company B in terms of aspect 8 named as ***blame culture*** under dimension 3 which is ***perceptions of the causes of safety incidents*** is given in the Figure 5.9.

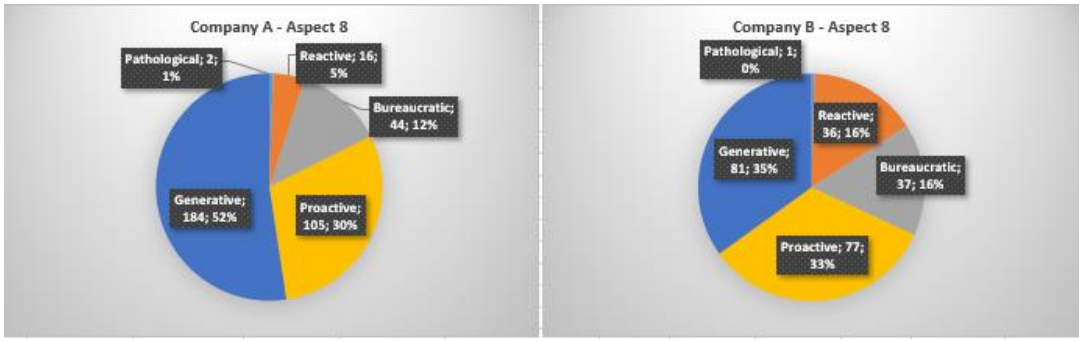


Figure 5.9. Comparison in terms of aspect 8

As can be seen in Figure 5.9, there is a significant difference between Company A and Company B in terms of aspect 8, which is ***blame culture.***

In companies which have poor safety culture, there is a strong blame culture and individuals may be subject to disciplinary action (MaPSaF, 2006). BBS aims to understand the real causes of accidents, incidents, near misses and correct them through behavior change and it is based on engaging in, motivating, assisting safe behaviors (HSA, 2013).

As mentioned for "aspect 5: priority given to safety", because Company A treats safety as a value, trust is built in the company and workers know that the company will not use the accident/incidents as an opportunity to blame someone but to improve safety. There is no disciplinary process in Company A, and all feedback is based on positive reinforcement. However, there is a disciplinary process in Company B, and sometimes results of the incident/accidents lead to disciplinary actions for the workers. This can be the reason for the significant difference between the companies in terms of aspect 8.

5.5. Dimension 4

The comparison of the Company A and Company B in terms of aspect 9 named as ***reporting system and its usage*** under dimension 4, which is ***investigating health and safety incidents***, is given in the Figure 5.10.

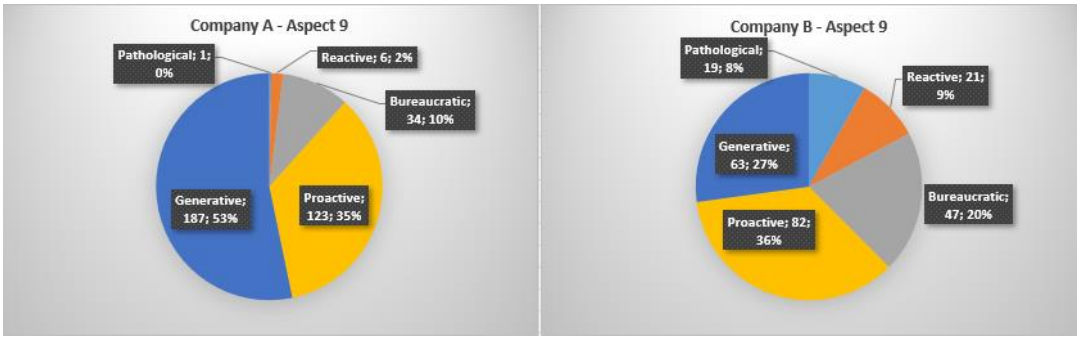


Figure 5.10. Comparison in terms of aspect 9

As can be seen in Figure 5.10, the participants classified Company A as generative and Company B as proactive. Although both companies have electronical reporting systems, workers in Company B prefer a written reporting tool and this shows that the electronical reporting system is not considered to be as easily reachable and effective in Company B.

However, in Company A, an instant messaging system is used for reporting any kind of hazards, unsafe conditions, and this has been adopted and used by workers as an easy and effective reporting method.

The comparison of the Company A and Company B in terms of aspect 10 named as ***staff feeling on reporting*** under dimension 4 is given in the Figure 5.11.

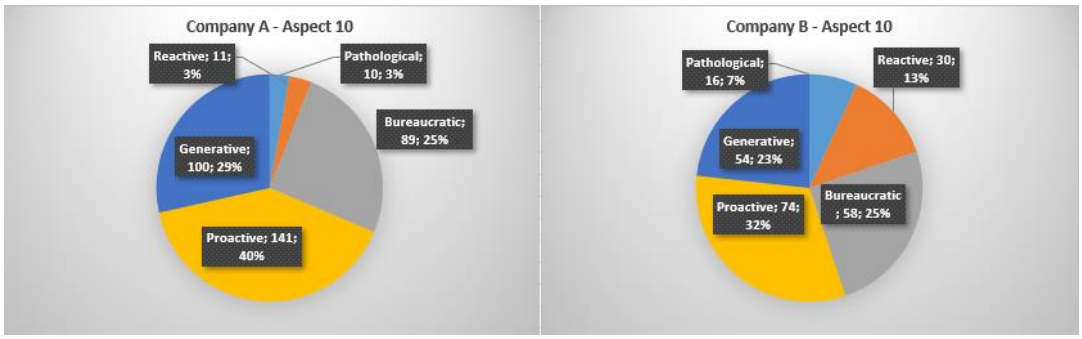


Figure 5.11. Comparison in terms of aspect 10

Results show that workers are confident to report any issue related to safety in each company. The higher ratio of Company A also complies with the result of the aspect 8: blame culture, which has mentioned before that the workers are more confident that they will not be blamed or punished after reporting in Company A. As can be seen in Figure 5.11, both companies are in proactive level.

The reason why the companies are classified as proactive level, but not generative, level may be related to the statement in the generative section in the question which states: “workers take an active role in all processes after the reporting”. Both companies notify the reporter that the report has been received and included in the system. However, the investigation related to this reporting (if any) or the actions taken as a result of this reporting is not communicated with the reporter. So the

reporter is not notified if the reporting leads to a good outcome, and it may prevent an accident.

The comparison of the Company A and Company B in terms of aspect 11 named as ***focus of investigation /investigation system*** under dimension 4 is given in the Figure 5.12.

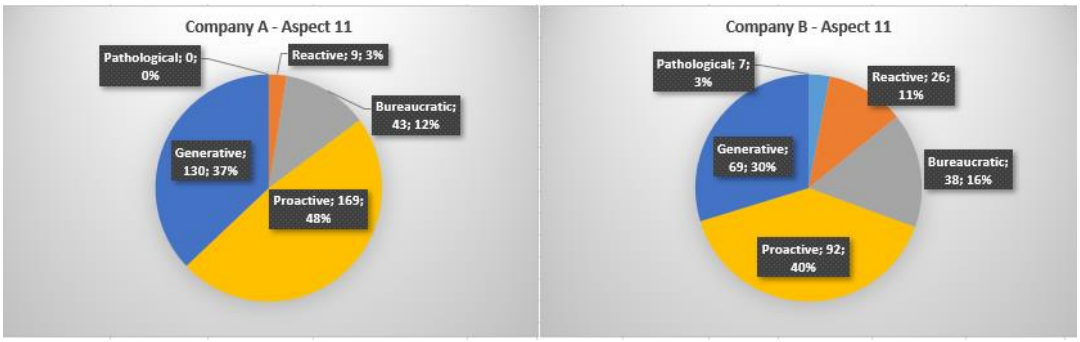


Figure 5.12. Comparison in terms of aspect 11

As can be seen in Figure 5.12, participants classified both companies in proactive level. This is mainly because the investigation methods are not communicated with the workers after any event, the only subjects communicated with the workers are, what happened, why it happened, and which actions need to be taken in order to prevent a reoccurrence. All workers in both companies believe that all accidents, incidents, near misses etc. are investigated by the company, but they are not sure if the investigation methods are academically approved and/or methods of the procedure related to accident investigations are reviewed and renewed as needed.

The comparison of the Company A and Company B in terms of aspect 12 named as who is doing the investigations? under dimension 4 is given in the Figure 5.13.

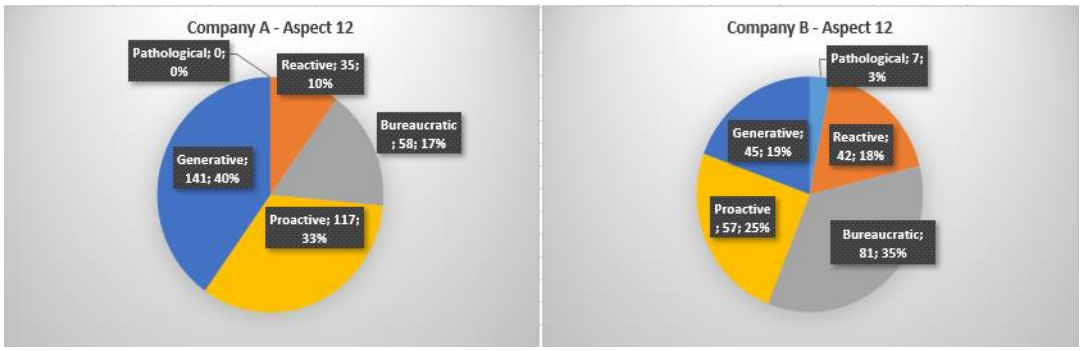


Figure 5.13. Comparison in terms of aspect 11

One of the major differences between companies is seen in this aspect 12. The difference is mainly related to the approach in designing investigation teams in companies.

For Company B, the investigations are mainly conducted by a team consisting of people from safety department (safety professionals, doctors, psychologist, support personnel etc.). However, in Company A, investigation teams involve supervisors, people from the safety department, upper management and workers. Unlike Company B, management representatives and workers are involved in the investigation process in Company A. Based on the importance of the reporting, regardless of whether it is an accident or a near miss, the top management of Company A visits the area where the event (accident/incident/near misses etc.) occurred and gets feedback from the people who observed this event.

The comparison of the Company A and Company B in terms of aspect 13 named as ***results of investigation*** under dimension 4 is given in the Figure 5.14.

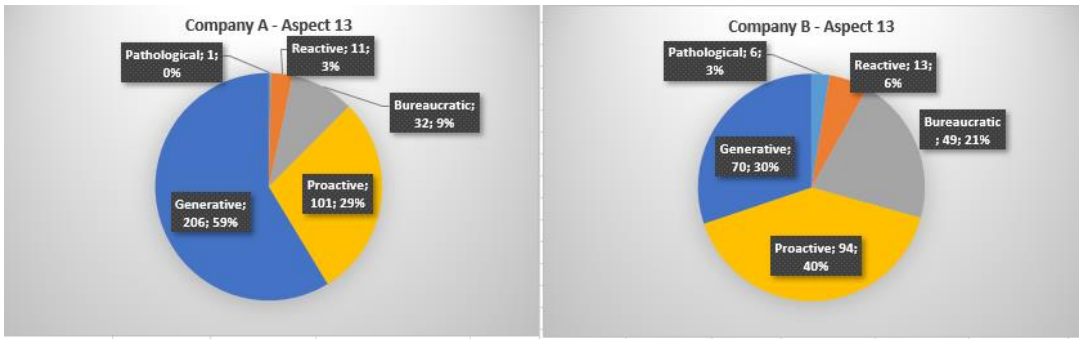


Figure 5.14. Comparison in terms of aspect 13

Company A is classified as generative and Company B is classified as proactive. This difference is mainly related to the actions taken after the investigations. In Company B, the results of the investigations are mainly communicated with the specific department in which the event occurred, and they are not expanded to other departments which have similar work tasks. However, in Company A, when an investigation is done, the results are shared with each department that has similar work tasks and actions to be taken are expanded all over the company, where they are relevant.

5.6. Dimension 5

The comparison of the Company A and Company B in terms of aspect 14 named as ***learning from safety incidents*** under dimension 5, which is ***organizational learning following a safety incident,*** is given in the Figure 5.15.

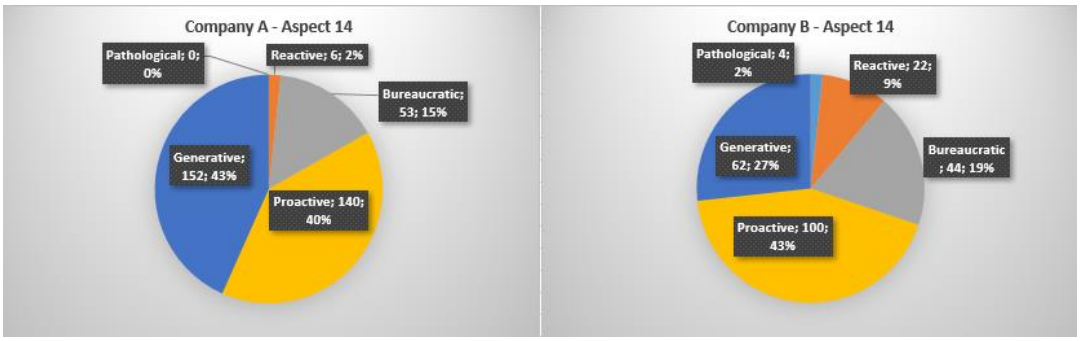


Figure 5.15. Comparison in terms of aspect 14

As can be seen in Figure 5.15, Company A is classified as generative and Company B is classified as proactive. Both companies have a notification system that includes the communication of the details of the accidents/incidents that occurred in their companies. As explained in aspect 13, In Company B, the results of the investigations are mainly communicated internally with the specific department in which the event occurred. However, in Company A, the results of the event which occurred in the company are communicated with all relevant departments and additionally, the accidents that occurred in other companies which serve in the same sector are communicated with all workers through e-mails and notification boards.

The lessons learned systems are actively used in Company A. As stated in MaPSaF (2006), Company A learns from both internal and external events and shares this learning both within and outside the organization.

The comparison of the Company A and Company B in terms of aspect 15 named as ***change management*** under dimension 5 is given in the Figure 5.16.

Figure 5.16. Comparison in terms of aspect 15

As can be seen in the Figure 5.16. Both companies are classified as proactive. In both companies, the participation in change management and/or decision-making processes is limited with upper management and people from safety department. The visitors, subcontractors and advisors are not included in these processes. The results also showed that some of the workers also do not think that workers are involved in change management and/or decision-making process, hence the bureaucratic level also has an important ratio.

5.7. Dimension 6

The comparison of the Company A and Company B in terms of aspect 16 named as ***information flow*** under dimension 6, which is ***communication about safety issues***, is given in the Figure 5.17.

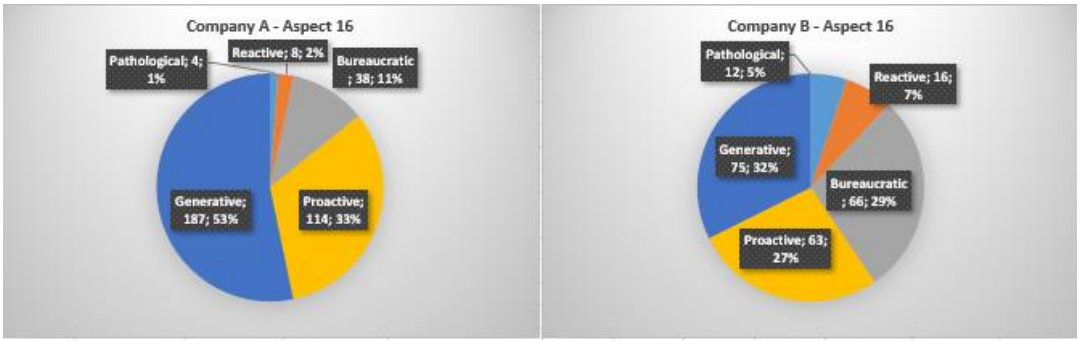


Figure 5.17. Comparison in terms of aspect 16

As can be seen in Figure 5.17. Although both companies are classified as generative level, there is a significant difference of the number of workers who classified the companies as generative. The reason that Company A has a greater percentage in generative level is already explained in different aspects: mainly aspect 4: management commitment and aspect 15: learning from safety incidents.

Information flow has an important role in BBS approach. In generative level, the organization communicates both external and internal safety related information with all workers regardless of their working position. "Trust based open communication" is a subject that is emphasized in Company A principles (which is a written and published document). Apart from the formal notifications, Company A has a program which is called family visits. Every month one family visit to one of the workers' homes is conducted by people from HR and safety departments, and health and safety subjects are discussed in these family visits. Additionally, every year at least 3 campaigns are organized for a specific safety subject such as PPE usage, hand and finger protection, manual handling etc. in Company A. These campaigns include specific trainings and informal gathering in cafeteria. The notification boards are also actively used, and the subjects referred to in these boards are renewed biweekly.

The comparison of the Company A and Company B in terms of aspect 17 named as ***safety communication*** under dimension 6 is given in the Figure 5.18.

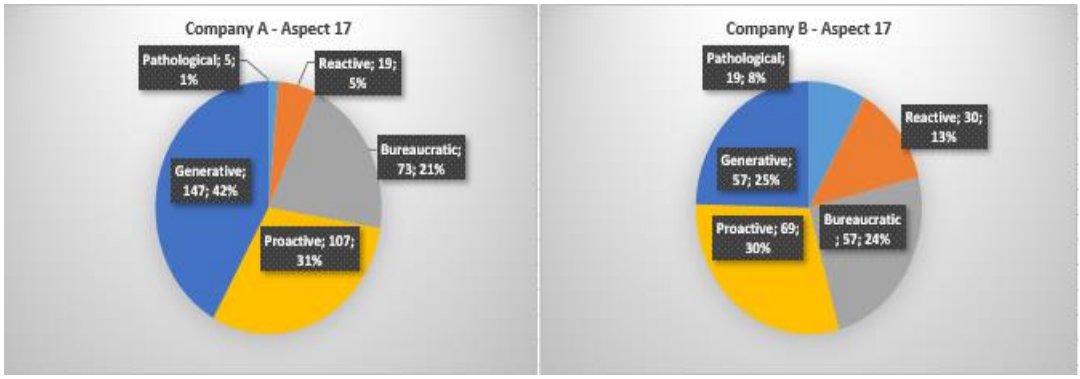


Figure 5.18. Comparison in terms of aspect 17

As can be seen in Figure 5.18, Company A is classified as generative and Company B is classified as proactive. There is a significant difference between companies based on aspect 17 safety communication. Communication goes upwards and occurs only after something has gone wrong in the companies which have poor safety culture (MaPSaF, 2006).

The equality of communication about safety issues is one of the important subjects in BBS. There are numerous factors which can be listed and which are related to the difference between the companies. One of them is management involvement in the kick-off meetings, risk discussion meetings and all employee meetings as mentioned before in aspect 4.

The main role of the management in this meeting is gathering feedback from all workers. This process creates an environment where employees can openly convey their opinions and concerns about the safety to the upper management and all related units.

Additionally, OHS committee meetings were held twice a month in Company A (although the legal requirement is once in a month). All workers' representatives attend the meeting and before the meeting, they get feedback from workers in order to present them in the meeting.

5.8. Dimension 7

The comparison of the Company A and Company B in terms of aspect 18 named as ***do the staffs feel supported?*** under dimension 7, which is ***personnel management and safety issues***, is given in the Figure 5.19.

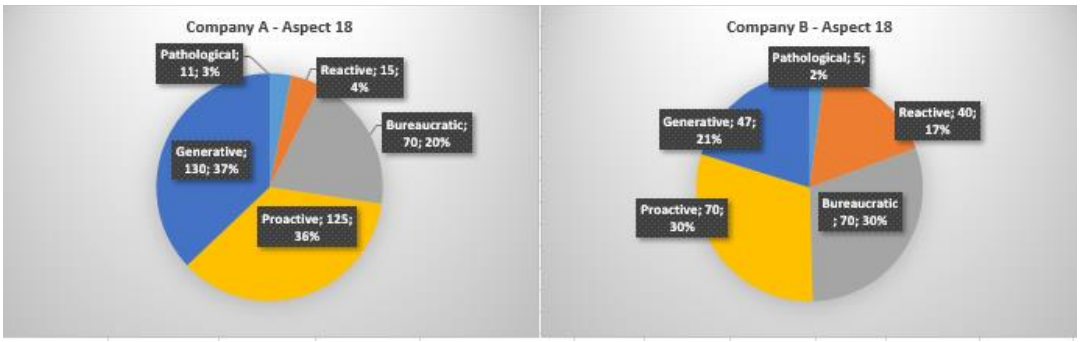


Figure 5.19. Comparison in terms of aspect 18

As can be seen in the Figure 5.19, Company A is classified as generative. For Company B, the number of participants that classify the company as proactive and bureaucratic is the same and it is above the ones that classify Company B as generative. The difference is related to the open communication system and also workers' trust in the company and the company's commitment to continuous improvement. As mentioned before, the communication in Company A is open and trust-based, workers feel confident in voicing their concerns or opinions the same way they feel confident in reporting any safety problem.

Positive reinforcement is a crucial subject for BBS and one of the intense tools that are used in Company A. Disciplinary actions are not present in Company A and all problems are to be solved with the positive reinforcement approach. Even the unsafe acts of the workers are not criticized, and the behavior is eliminated by showing the worker the safe behavior. Additionally, in order to encourage reporting, a rewarding system is in place in Company A. This system has both qualitative and quantitative parts; workers have additional payments for their reporting number. Apart from this payment, a "special award" and a "golden suggestion award" are given to the workers based on the importance of their reporting, suggestion or action.

The reason why the numbers of participants that classified Company A as generative and as proactive are very close can be explained with the fact that the feedback system is not working quite well as explained in aspect 10. Both companies notify the workers that their reports, suggestions or concerns have been received and included in the system, however, following steps are not communicated with the workers. Thus, the workers are not notified of the outcome of the process.

The comparison of the Company A and Company B in terms of aspect 19 named as ***work description/recruitment/ performance evaluation*** under dimension 7 is given in the Figure 5.20. As can be seen in the Figure 5.20.

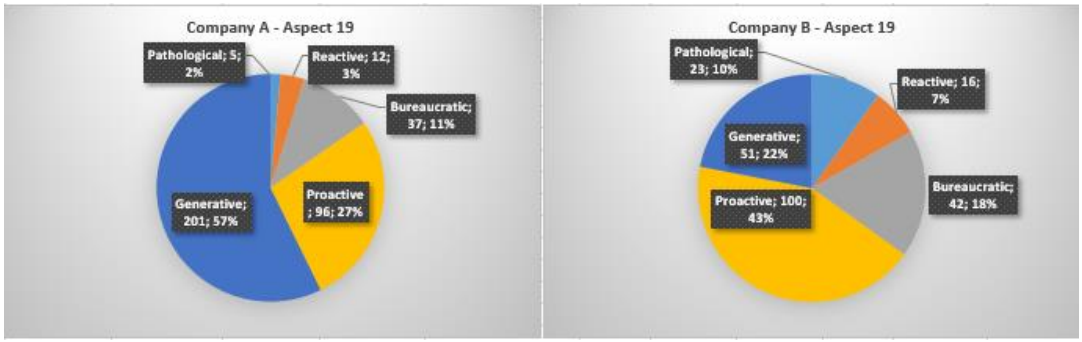


Figure 5.20. Comparison in terms of aspect 19

Company A is classified as generative and Company B is classified as Proactive. The reason why the Company A is classified as generative is as follows: Firstly, the work descriptions included health and safety responsibilities for all working positions in Company A. These responsibilities were communicated with the newly hired workers during the recruitment process and also in the orientation training.

Secondly, the safety performance of the workers is one of the main inputs for the management to assess the workers' overall performance. The safety performance assessment is done by people from the safety department for every worker and this assessment process is based on an objective criterion such as training attendance, number of reporting (unsafe acts, conditions, near misses *etc*.). The safety performance assessment has an effect up to 20% of the worker's overall assessment, also affecting the issues such as salary increase and promotion.

The comparison of the Company A and Company B in terms of aspect 20 named as ***well-being*** under dimension 7 is given in the Figure 5.21.

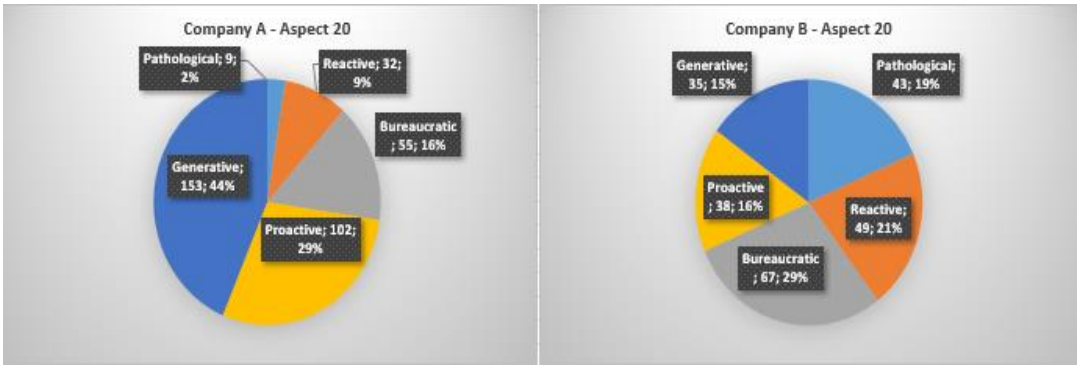


Figure 5.21. Comparison in terms of aspect 20

As can be seen in the Figure 5.21, this aspect is one of the aspects that shows great difference between the companies. The workers of Company B classified their company in bureaucratic level, which states that only physical and social wellbeing of workers are considered in the workplace and there are limited programs regarding social wellbeing. However, for Company A, workers' classification is generative and that means workers believe that the physical, social, and mental (psychological) well-being of workers is considered in the workplace (as a whole) and support programs are in place and sufficient.

One of the main reasons why Company A is classified as generative is that it has a full-time occupational psychologist who is always in the company facility. Appointments are taken directly from the psychologist by the workers, and there is no concern among the workers about the confidentiality of the meetings. Discussion subjects in psychologist appointments are not limited to work subjects and workers can get support on any subject they want. Family members can also contact the psychologist if the worker requests it, especially if the worker needs support on family-related issues.

Additionally, Employee Assistance System is in place in Company A. This system is handled by a third-party consultation firm, and this firm gives assistance to the workers for every kind of topic such as doctor needs/suggestions, legal support,

pediatric support, vacation planning *etc*. Workers simply call this firm and ask for help on a specific subject, and comments on this subject are gathered from the firm in very short notice.

5.9. Dimension 8

The comparison of the Company A and Company B in terms of aspect 21 named as ***training implementation*** under dimension 8, which is ***staff education and training about safety issues***, is given in the Figure 5.22.

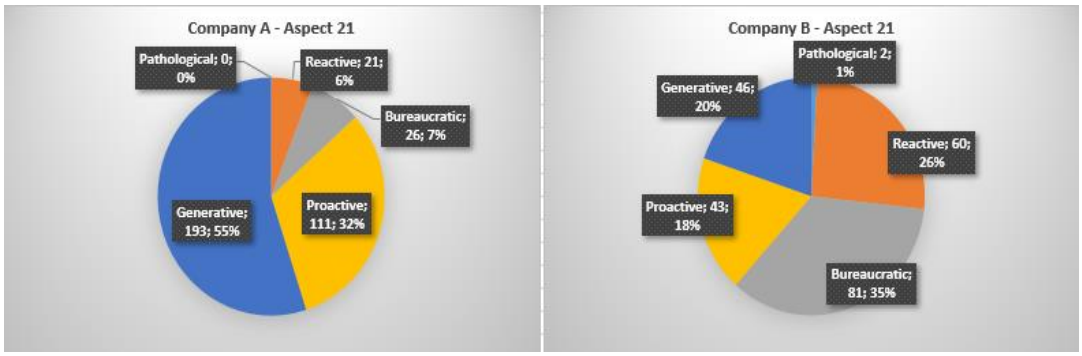


Figure 5.22. Comparison in terms of aspect 21

As can be seen in the Figure 5.22, the workers of Company B classified their company in bureaucratic level, which shows that safety trainings for workers in the workplace are not limited to obligatory legislative trainings, but also include additional trainings on risks on conducted work. For Company A, workers' classification is generative and that indicates that safety trainings for workers in the workplace are regularly conducted in many different ways (classroom, electronic medium, toolbox trainings) encompassing many different subjects. In addition, the success of the training is measured and visitors, subcontractors *etc*. are included in these trainings.

One of the main reasons why the Company A is classified as generative is related to observation system stated before. This system has two training programs in addition to the legal required trainings. The BBS trainings and the Observer Trainings are received by all employees including the top management. Everyone had to devote

one day to these trainings. All trainings (including legal, specific and BBS trainings) were conducted with pre and post evaluation tests to assess the performance of the training.

As stated in aspect 14, events (incidents, accidents, near misses) are treated like an opportunity to learn and a communication e-mail is sent to all workers after an event occurs. This communication is called “OHS in 1 minute” and it includes the details of the event such as what happened, why it happened and what we have learned.

Special training sessions are designed if an event occurs and it is realized after the investigation that this event has occurred because of the lack of knowledge of the workers and this training is provided to all related workers.

Additionally, all visitors received basic training related to safety rules of the Company A when they entered the company’s facility. For subcontractors, initially legal training certificates of the subcontractor are checked before they commence the work and a 2-hour additional training is provided to each subcontractor by the safety department and the main rules of the Company A, the work-related risks and precautions are discussed in this training.

The comparison of the Company A and Company B in terms of aspect 22 named as ***management approach to safety trainings*** under dimension 8 is given in the Figure 5.23.

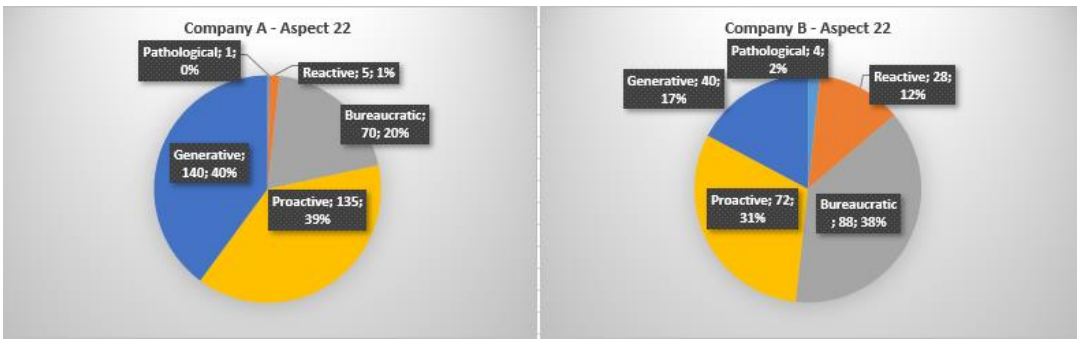


Figure 5.23. Comparison in terms of aspect 22

As can be seen in the Figure 5.23, the workers of Company B classified their company in bureaucratic level, which shows that although management in the

workplace allocates a budget to safety training and they convey that safety training is an important issue with workers, they do not attend the trainings themselves. For Company A, workers' classification is generative and that indicates that workers believe that safety training is one of the most important issues for management in the workplace and they reflect this understanding to the workers. However, the reason why the ratio of the generative and proactive level is very close is that not all workers believe that upper management always participates in the safety training, only the ones who know the observation system requirements are aware of the 8-hour training requirement of observation system for upper management.

The comparison of the Company A and Company B in terms of aspect 23 named as ***training needs identification*** under dimension 8 is given in the Figure 5.24.

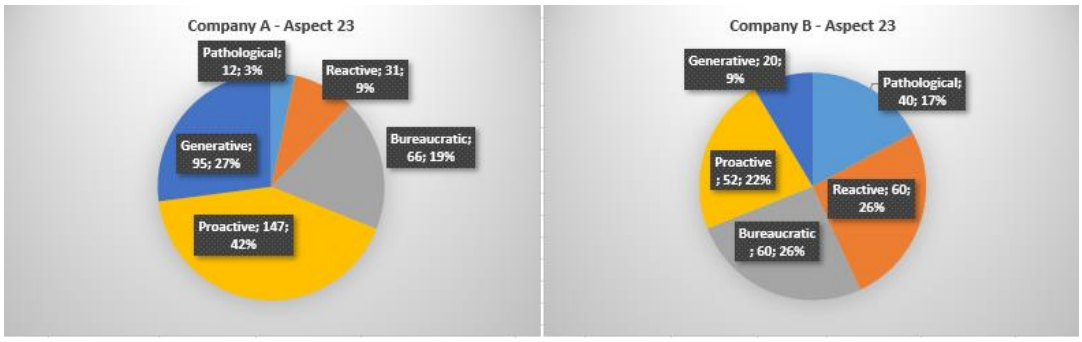


Figure 5.24. Comparison in terms of aspect 23

As can be seen in the Figure 5.24. For Company B, number of participants that classify the company as reactive and bureaucratic is the same and it is above the ones that classify Company B as proactive or generative. This shows that a team (consisting of management, safety department, and supervisors) identifies the training needs in Company B and the opinion of workers is rarely regarded. For Company A, workers' classification is proactive and that shows that the opinions of workers from every level are regarded in the identification of safety training and they have the right to request trainings.

There is a "leaning management system (LMS)" process in place in Company A. With this process, the training requests of the workers are collected at the beginning of each year and these requests are assessed during the training need identification

process. Workers are allowed to request any kind of training such as specific safety training, certification training, technical trainings *etc*.

The reason why Company A is classified as proactive and not generative is that although requests from workers are collected, they are not involved in the determination of the content of the trainings and the workers are not allowed to form their own training programs.

5.10. Dimension 9

The comparison of the Company A and Company B in terms of aspect 24 named as ***team structure*** and aspect 25 named as ***the role of team member/engagement*** under dimension 9, which is ***team working around safety issues***, is given in the Figures 5.25. and 5.26.

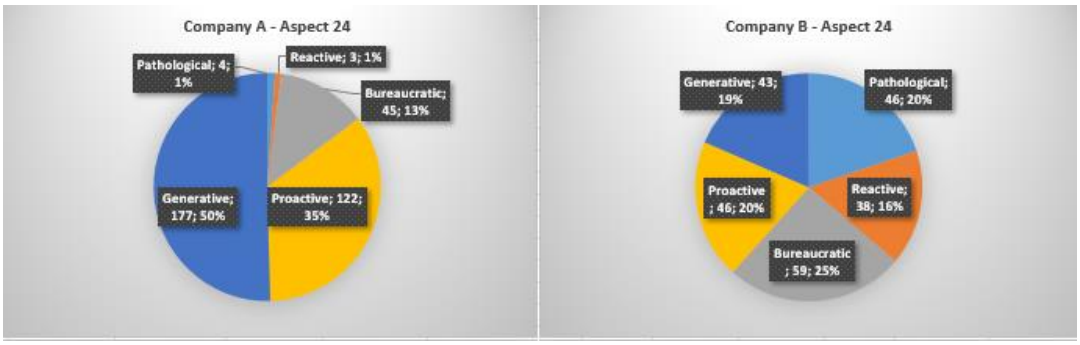


Figure 5.25. Comparison in terms of aspect 24

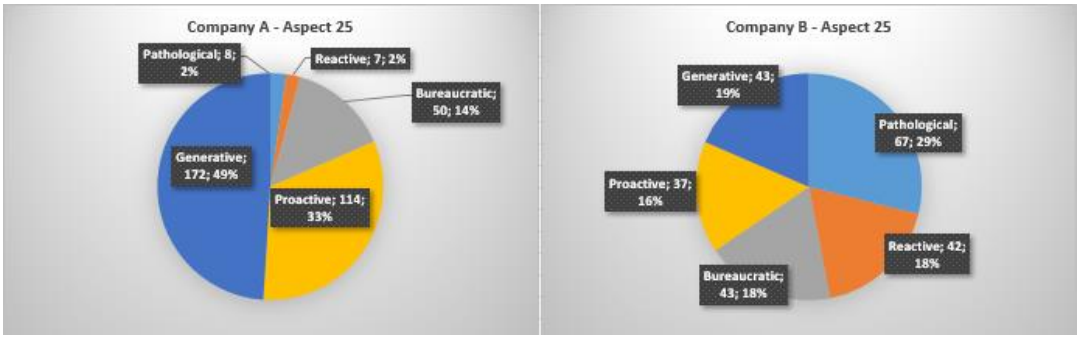


Figure 5.26. Comparison in terms of aspect 25

As can be seen in the Figure 5.25 and Figure 5.26, the classification of Company B has not showed a significant level in both aspects. All ratios of the levels are very similar to one another. However, that Company A is classified as generative level for both aspects shows "*the teams have been formed for safety issues in the workplace and workers are a part of these teams. These teams play an important role in the identification of risks and they work in cooperation and harmony. They are supported and appreciated by upper management. The performance of the teams is evaluated, and changes are made when necessary and the roles of workers within teams working on safety issues in the workplace are determined, everyone on the team has equal value and roles, all workers are aware that they are in fact part of these teams"*.

The team-working is one of the most important subjects for BBS as stated before and observation teams are the key elements of safety performance of Company A. The details related to the observation teams are given in the Company A profile and also other relevant previous aspects. The major difference in these aspects between the Company A and B is directly related to observation system/teams.

CHAPTER 6

CONCLUSIONS AND RECOMMENDATIONS

6.1. Conclusions

In this study, firstly, a safety culture maturity questionnaire was developed and secondly it was applied in two companies with the participation of 358 workers from Company A and 248 workers from Company B. The results show that the safety culture maturity level of the Company A, which has been using BBS since 2009, is higher in each aspect compared to the Company B, which mainly uses the traditional safety approach.

According to the findings gathered from this study, the main conclusions have been articulated in the following paragraphs.

For Company A, 20 aspects of the safety culture are at the generative level and for other 5 aspects, it is classified as proactive level. Company B is classified as generative and proactive in 8 aspects and bureaucratic in 6 aspects. There is only one aspect classified as pathological, which is Aspect 25: the role of team member/ engagement for Company B.

The greater differences between two companies are seen in the aspects listed below:

- ***Aspect 2: Inspection / audit;*** The main reason for this difference is explained with the observation system used in Company A. Observation system is one of the most crucial factors for BBS approach implemented in Company A and it led to workers' involvement in audit/inspection process.
- ***Aspect 4: Management commitment;*** As mentioned earlier, the management commitment is as important as the workers' involvement in safety in BBS approach. BBS approach is mainly grounded by equality in the all levels of

employees in the company related to safety issues such as communication, training participation, decision making etc.

- ***Aspect 5: Priority given to safety;*** The main reason for this difference is related to "value" concept. Company A refers to safety as a value, not as a priority, and this is an important factor for employees to internalize safety and keep safety on their mind every time.
- ***Aspect 12: Who is doing the investigation?*** Company A has an investigation team system which involves workers and upper management participation, and this is the main reason for the higher difference in this aspect.
- ***Aspect 19: Performance evaluation;*** In BBS approach, everyone is responsible for both their safety and the safety of others. The culture in BBS approach is to care about not only yourselves but also others. With this point of view, performance evaluation is considered to be a very important factor for safety performance of the company in Company A and the performance assessment programs are in place, and this is the reason why Company A is at a higher level in this aspect.
- ***Aspect 20: Wellbeing*;** Therefore BBS approach is taken in person in a center of safety system, all physical, social, and psychological conditions and interventions of the workers are held as a subject of wellbeing. Traditional safety approach mainly focuses on the physical wellness of the workers. That's why Company A has a full-time psychologist occupied in their company and they have an employee assistance system in place. The difference is related to these implementations.
- ***Aspect 21: Training implementation;*** the difference in this aspect is mainly related to additional BBS trainings, specifically observation program trainings provided to the workers in Company A. Additionally, workers in Company A believe that the company sees the accidents, incidents, near misses etc. as a learning opportunity and training programs are designed in accordance with the consideration of these events.
- ***Aspect 24: Team structure and aspect 25: The role of team member/ engagement;*** the difference in the aspect under dimension 9, which is ***team***

working around safety issues, shows great difference between the companies. This is mainly because of the observation system in place in Company A. For this observation system, observation teams are formed and actively involved in audit and inspection processes. These teams have participants from all levels of working positions in the company and each member is equal in terms of raising their opinions about the safety issues and work-related risks.

This study revealed that the BBS approach, which can be implemented in addition to the traditional safety programs which are already applied by companies, contributes to the improvement of the safety culture of companies. The fact that the BBS approach is people-oriented increases the belief of the employees that they can be a part of any safety process such as inspection audit, investigation, safety communication. As employees are more involved in safety related processes, their incentive to embrace these processes is increasing, and this becomes an important way to achieve a high level of safety culture.

6.2. Recommendations

Although BBS program is currently implemented in Company A, there is still room for improvement. With the findings of this study, Company A should initially focus on the involvement of the workers in; policy/procedure development, training needs identification and change management processes.

It is necessary to communicate the details of the reporting system to the employees in a wider perspective and in this context, the trust of the employees in this system should be increased. Employees should be supported with constant feedback especially on the issues in which they are involved such as reporting, accident/incidents or near misses. Even if the outcome of their reports or opinions/concerns does not lead to any significant change in the company, they need to know that the company cares about their contributions to the safety.

If a safety-related action is to be taken, the first thing to do with this action is to start by explaining why this action is taken. Employees should understand that the actions are not upper management forced decisions, and the outcome of the system will improve communication between employees and the company.

As a result of this study, instead of investigating reasons of the weaknesses of the Company B, the focus point should be the actions that need to be taken in order to eliminate these weaknesses and programs that need to be followed to improve safety culture level for all aspects. With the findings of this study, it has been demonstrated that Company B's safety culture maturity level in all aspects has sufficient grounding to design and implement its own BBS program. Hence, in the study it is revealed that BBS is an effective method to improve safety culture maturity level, Company B can use BBS approach to increase its safety culture level.

With the implementation of BBS programs, an increase in safety culture maturity level in safety communication, team working, and audit/inspection concepts can be seen in a very short time. By introducing value concept to the workers, which is one of the major concepts in BBS, it is thought that employees will internalize safety issues, their safety perceptions will change, and this will have a positive impact on both safety performance and productivity of the employees.

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APPENDICES

A. Safety culture maturity questionnaire

1. Yaşınız:

<20 20-30 31-40 41-50 51-60 >60

2. Cinsiyetiniz:

Kadın Erkek

3. Çalışma alanınız:

Ofis çalışanı Atölye çalışanı

4. Toplam iş tecrübeniz:

0-1 2-5 6-10 11-15 16-20 >20

5. İşyerindeki tecrübeniz:

0-1 2-5 6-10 11-15 16-20 >20

6. Hiç iş kazası geçirdiniz mi?

Evet Hayır

7. Hiç ramak kala olay/güvensiz durum/güvensiz davranış raporlaması yaptınız mı?

Evet Hayır

8. Hiç güvenli davranış alışkanlarını konu alan bir İSG eğitimine katıldınız mı?

Evet Hayır

9. Hiç İSG ile ilgili ekiplerinin/yapılan iyileştirme çalışmalarının içerisinde yer aldınız mı?

Evet Hayır

10. Hiç İSG ile ilgili bir iletişim çalışması (eposta, afiş, broşür, mesaj) size ulaştı mı?

Evet Hayır

Lütfen aşağıdaki sorulardan size en uygun cevapları işaretleyin.

1. **Aşağıdaki ifadelerden hangisi İSG'yi geliştirmek için yapılanlar konusunda işyerinizi tanımlar?**
   A. İSG'yi geliştirmek için kullanılabilecek bütçe ve zaman hiçbir zaman ayrılmaz.
   B. İSG'yi geliştirmek için kullanılabilecek bütçe ve zaman istenmeyen olaylardan sonra olayın etkilerini azaltmak için ayrılır ve bu bütçe ve zaman oldukça kısıtlıdır.
   C. İSG'yi geliştirmek için kullanılabilecek bütçe ve zaman yasal denetimler gibi özel durumlar öncesi iyi görünmek için ayrılır ve bu bütçe ve zaman kısıtlıdır.
   D. İSG'yi geliştirmek için kullanılabilecek bütçe ve zaman sağlıklı ve güvenli bir işyeri sağlamak için ayrılır ve bu bütçe ve zaman orta ölçeklidir.
   E. İSG'yi geliştirmek için kullanılabilecek bütçe ve zaman her zaman mevcuttur ve tüm ilgili riskleri azaltmak için ayrılır ve bu bütçe ve zaman büyük ölçekli kabul edilebilir.

2. **Aşağıdaki ifadelerden hangisi İSG denetimleri konusunda işyerinizi tanımlar?**
   A. İSG denetimleri yapılmaz veya çok seyrek ve özenilmeden yapılır ve bu denetim bulguları dikkate alınmaz.
   B. İSG denetimleri istenmeyen olaylardan sonra veya yasal denetimlerden önce yapılır, bu denetimler göstermeliktir ve gerçek şirket ihtiyaçlarını yansıtmaz.
   C. İSG denetimleri sadece üst yönetim tarafından sıklıkla yapılır ancak bu denetimler şirketin ihtiyaçları doğrultusunda yapılmamaktadır ve ortaya çıkan sonuçlar sadece bir olay yaşandığında günü kurtarmak adına değerlendirmeye alınır.
   D. İSG denetimleri üst yönetim ve şefler/posta başları (ilk amirler) katılımıyla yapılır ve bu denetim sonuçlarında alınan önlemler gerçekten İSG'yi geliştirmeye yöneliktir.
   E. İSG denetimleri hem üst yönetim ve ilk amirlerin hem de çalışanların katılımıyla gerçekleştirilir, bu denetimler sonuç odaklıdır ve bu denetim sonuçları doğrultusunda önlemler planlanır ve uygulanır, bu planlama ve uygulama süreçlerine hem üst yönetim ve ilk amirler hem de çalışanlar dahil olur.

3. **Aşağıdaki ifadelerden hangisi İSG politikası ve prosedürleri konusunda işyerinizi tanımlar?**
   A. İSG politikası işyerinde oluşturulmamıştır.
   B. İSG politikası vardır fakat bu politika güncel değildir ve ancak herhangi bir olay yaşanırsa uygulanmaktadır.
   C. İSG politikası ve bununla ilişkili birçok prosedür yazılı olarak vardır ve günceldir fakat bunlar sadece hazırlanmış dokümanlar olarak bulunur ve uygulama konusunda zayıf kalmıştır.
   D. İSG politikası ve ilişkili prosedürler üst yönetim ve İSG Birimi tarafından oluşturulmuştur ve düzenli olarak gözden geçirilmektedir. Bu politika ve prosedürler genel hatlarıyla İSG'yi geliştirmek için uygulanmaktadır.
   E. İSG politikası ve prosedürleri hem üst yönetim ve İSG birimi hem de çalışanların katkısıyla oluşturulmuştur. Tüm çalışanlar tarafından benimsenmiştir ve İSG tüm çalışanların yaşam biçimi olduğu için İSG politikasına ve prosedürlerine olan ihtiyaç azalmıştır.

4. **Aşağıdaki ifadelerden hangisi Yönetimim İSG'ye bağlılığı konusunda işyerinizi tanımlar?**
   A. Üst yönetim İSG algısına sahip değildir ve İSG'ye gereken önemi vermez. İSG konularını zaman ve para kaybı olarak görür.

B. Üst yönetimde İSG algısı yavaş yavaş oluşmaya başlasa da yeterli değildir. Çalışanlar üst yönetimin İSG konularında duyarlı olduğunu düşünmez. Sadece yasal olarak zorunluluklar için zaman ve para ayırdığına inanır.
C. Üst yönetim kendi için İSG kültürünü oluşturduğuna inanır fakat bu çalışanlar tarafından böyle görülmez. Çalışanların üst yönetimin önceliğinin üretim olduğu algısı devam etmektedir. Üst yönetim İSG ile ilgili süreçlere sadece çok ciddi bir olay yaşandığında dahil olur.
D. Herhangi bir sağlık ve güvenlik sorunu ortaya çıktığında (ciddi olmasına gerek yok) üst yönetim kararlı bir şekilde harekete geçer ve bu sorunu hızlı bir şekilde çözer. Üst yönetim sorun olmayan İSG süreçlerine de dahil olmaya başlamıştır.
E. Üst yönetimin İSG algısı üst düzeydir. Üst yönetim, sağlık ve güvenlik koşullarını sağlamak ve iyileştirmek için gerekli tedbirlerin alınması adına bütün süreçlere dahil olur ve alınan önlemleri izler ve değerlendirir.

5. Aşağıdaki ifadelerden hangisi güvenlik önceliği konusunda işyerinizi tanımlar?
A. Şirkette İSG konuları görmezden gelinir. Üretim önceliği üst düzeydedir.
B. Şirkette İSG konuları görmezden gelinir ancak istenmeyen olaylar yaşandıktan sonra İSG konuları gündeme gelir ve bir süre geçtikten sonra eski haline döner.
C. Şirkette İSG dikkate alınır fakat yeterli düzeyde değildir, bu konuda plan ve prosedürler mevcuttur fakat düzenli olarak gözden geçirilmez ve güncel değildir. Üretim baskısı İSG konularında esnemelere yol açabilmektedir.
D. Şirkette İSG önceliği yüksektir ve güncellenen güvenlik gereksinimleri ile etkin olarak desteklenir. Üretim baskısı İSG konularının önceliğini azaltmaz.
E. Şirkette İSG en öncelikli konulardan biridir. Üretim önceliği her koşulda İSG önceliğinden sonra gelir. Çalışanların güvenlik önceliği her şeyden önce gelir ve herkes tüm işlere başlarken "Önce İSG" bilincindedir.

6. Aşağıdaki ifadelerden hangisi İSG sorumlulukları konusunda işyerinizi tanımlar?
A. İSG sorumlulukları işyerinde belirlenmemiştir.
B. İSG sorumlulukları sadece çalışanlar için belirlenmiştir ve üst yönetimin dayatması olarak algılanır.
C. İSG sorumlulukları işyerinde sadece çalışanlar ve ilk amirler için belirlenmiştir ve üst yönetimin dayatması olarak algılanır.
D. İSG sorumlulukları işyerinde hem çalışanlar ve ilk amirler hem de İSG birimi için belirlenmiştir. Bu sorumluluklara üst yönetim dahil edilmemiştir.
E. İSG sorumlulukları tüm paydaşlar (taşeron, çalışan, stajyer, İSG Birimi, üst yönetime vb.) için belirlenmiştir

7. Aşağıdaki ifadelerden hangisi risklerin değerlendirilmesi konusunda işyerinizi tanımlar?
A. İş ile ilgili riskler genellikle değerlendirilmez.
B. İş ile ilgili riskler ancak istenmeyen bir olay sonrasında değerlendirilir ve bu değerlendirme genellikle göstermeliktir. Maliyet gerektiren durumlarda riskler göz ardı edilir.
C. İş ile ilgili risklerin değerlendirilmesi sadece İSG Biriminin görevidir ve etkilenebilecek tüm grupların kapsandığı gözlenmez.

D. İş ile ilgili risklerin değerlendirilmesi sürecinde sadece çalışanların değil taşeron, ziyaretçi vb. tarafların da etkilenebileceği riskler değerlendirilir ve belirlenen riskler doğrultusunda önlemler alınır.
E. İş ile ilgili risklerin değerlendirilmesi sürecinde tüm çalışanlar dahildir. İş ile ilgili risklerin tamamı değerlendirir ve bütün çalışanlar riskleri azaltma yollarını arar, önlemlerin belirlenmesine destek olur ve bu önlemleri hayata geçirir.

8. Aşağıdaki ifadelerden hangisi gerçekleşen olayların (kazaların) sebeplerine yaklaşım konusunda işyerinizi tanımlar?

A. İşyerinde gerçekleşen olayların (kazaların) sebeplerinin şanssızlık olduğu düşünülür ve kontrol edilemeyeceğine inanılır.
B. İşyerinde gerçekleşen olayların (kazaların) sebeplerinin çalışanlar olduğu düşünülür ve kontrol yeniden eğitim ve disiplin tedbirleridir. Olaylar (kazalar) için çalışanlar suçlanır.
C. Üst yönetim tarafından işyerinde gerçekleşen olayların (kazaların) sebeplerinin çalışanlar haricinde sistem hataları (makina/ekipman/çalışma ortamı) da olabileceği düşünüldüğü iddia edilir, fakat çalışanlar arasında bu konu üst yönetimin düşündüğü kadar şeffaf ve adaletli görülmez.
D. İşyerinde gerçekleşen olayların (kazaların) sebeplerinin çalışanlar ve sistem hatalarının birleşimi olduğu düşünülür ve kontrol için çalışanlar süreçlere dâhil edilerek sistemler kontrol edilir.
E. İşyerinde gerçekleşen olayların (kazaların) sebeplerinin çalışan hatası dahi olsa sistemsel hatalara yönelik farkındalık üst seviyededir. Kazaya dahil olan çalışanlar her zaman açık ve güvenli iletişim için desteklenir ve kontrol için gerekli önlemler tüm iş süreçlerini de kapsayacak şekilde uygulamaya alınır.

9. Aşağıdaki ifadelerden hangisi gerçekleşen olayların (G.Durum/G.Davranış/Ramak Kala/Kazaların) bildiriminin yapılması konusunda işyerinizi tanımlar?

A. İşyerinde gerçekleşen olayların (G.Durum/G.Davranış/Ramak Kala/Kazaların) bildiriminin yapılacağı (raporlanacağı) bir sistem mevcut değildir.
B. İşyerinde gerçekleşen olayların (G.Durum/G.Davranış/Ramak Kala/Kazaların) bildiriminin yapılacağı (raporlanacağı) gelişmemiş bir sistem vardır, genellikle kullanılmaz, olaylar (kazalar) eğer mümkünse sümen altı edilir.
C. İşyerinde gerçekleşen olayların (G.Durum/G.Davranış/Ramak Kala/Kazaların) bildiriminin yapılacağı (raporlanacağı) bir sistem mevcuttur ancak göstermeliktir. Sistemin amacı formları tamamlamaktır.
D. İşyerinde gerçekleşen olayların (G.Durum/G.Davranış/Ramak Kala/Kazaların) bildiriminin isimsiz şekilde yapılabileceği elektronik bir raporlama sistemi vardır ve bu sistemin amaçlarından biri risk farkındalığını arttırmaktır.
E. İşyerinde gerçekleşen olayların (G.Durum/G.Davranış/Ramak Kala/Kazaların) bildiriminin isimsiz şekilde yapılabileceği, anlık, elektronik, erişilebilir ve kullanımı kolay bir raporlama sistemi mevcuttur ve bu sistem istenmeyen olayların yaşanmasını engellemek için kullanılır. Bildirim (raporlama) sistemi güven ve şeffaflık içermektedir.

10. Aşağıdaki ifadelerden hangisi gerçekleşen olaylar sonrasında çalışanların bildirim yaptığı esnada algıları konusunda işyerinizi tanımlar?

A. İşyerinde çalışanlar bildirim yapmaları konusunda teşvik edilmez ve yaşanan olayları raporladıkları zaman suçlanacaklarından korktukları için bildirim yapmazlar.
B. İşyerinde çalışanlar yaşanan olayları bildirmeye (raporlamaya) teşvik edilmez ve ancak göz önünde olan büyük olaylarda çekinilerek bildirim yaparlar.
C. İşyerinde çalışanlar yaşanan olayları bildirim yapmaya teşvik etmek için çalışmalar vardır fakat çalışanlar olayların bildirimini yaparken kendini güvende hissetmez.
D. İşyerinde çalışanlar yaşanan olayları bildirmeye teşvik edilir ve çalışanlar olayların bildirimini yaparken güvenli hissederler ve bildirim yapılan olaylar gelişim için fırsat olarak değerlendirilir.
E. İşyerinde çalışanlar yaşanan olaylarla ilgili bildirim yapmaya alışıktır, bildirim yapmanın önemi kavramışlardır ve bildirim yaptıktan sonrasındaki tüm süreçlere dâhil olurlar

11. Aşağıdaki ifadelerden hangisi gerçekleşen olaylar (G.Durum/G.Davranış/Ramak Kala/Kazaların) sonrasında yapılan araştırmalar konusunda işyerinizi tanımlar?

A. İşyerinde gerçekleşen olayların (kazaların) araştırması yapılmaz veya yapılan araştırmalar olayı kapatmak için yüzeysel yapılır.
B. İşyerinde gerçekleşen kazaların araştırması sadece ciddi olanlar için göstermelik olarak yapılır ve genellikle kazaya dahil olan çalışan üzerinde yoğunlaşır ve amaç yasal zorunlulukları yerine getirmektir.
C. İşyerinde gerçekleşen bütün kazaların araştırması yapılır, kaza araştırması için detaylı prosedürler mevcuttur ancak bu araştırmanın amacı asıl nedeni bulmak yerine prosedürleri uygulamak ve araştırmayı tamamlamış olmaktır.
D. İşyerinde gerçekleşen olayların Ramak Kalalar dahil araştırması yapılır, kaza araştırması için detaylı prosedürler mevcuttur ve bu araştırmanın amacı kök nedeni bulmak, olaylardan ders çıkartmak ve bulguları geniş çaplı olarak çalışanlar ile paylaşmaktır.
E. İşyerinde gerçekleşen bütün olayların Ramak Kalalar dahil sistemli (akademik ve bilinen teknikler kullanılarak) bir araştırması yapılır. Kaza araştırması için detaylı prosedürler mevcuttur ve araştırmanın amacı bir suçlu bulmak değil olayların gerçek nedenine ulaşmaktır. Olay araştırma prosedürleri gerçek anlamıyla uygulanır ve bu prosedürler düzenli olarak gözden geçirilerek yenilenir.

12. Aşağıdaki ifadelerden hangisi gerçekleşen olaylar (G.Durum/G.Davranış/Ramak Kala/Kazaların) sonrasında yapılan araştırmaların kimler tarafından yapıldığı konusunda işyerinizi tanımlar?

A. İşyerinde gerçekleşen kazaların araştırması tecrübesiz bir amir tarafından gelişi güzel yapılır.
B. İşyerinde gerçekleşen kazaların araştırması yalnızca İSG Uzmanları tarafından sadece o kaza özelinde yapılır.
C. İşyerinde gerçekleşen kazaların araştırması İSG Birimi (İSG uzmanları, doktor, psikolog, destek elemanları vb.) içererek oluşturulmuş bir ekip ile sadece kaza özelinde yapılır.
D. İşyerinde gerçekleşen kazaların araştırması ilk amirler, İSG Birimi ve üst yönetimin de katılımı ile oluşturulmuş bir ekip tarafından yapılır.

E. İşyerinde gerçekleşen kazaların araştırması ilk amirler, İSG Birimi, üst yönetim ve çalışanların katılımı ile oluşturulmuş bir ekip tarafından yapılır. Kaza araştırma ekibinde işyeri bünyesindeki her gruptan katılım vardır.

13. Aşağıdaki ifadelerden hangisi gerçekleşen olaylar (G.Durum/G.Davranış/Ramak Kala/Kazaların) sonrasında yapılan araştırmaların sonuçları konusunda işyerinizi tanımlar?

A. İşyerinde kaza araştırmaları yapılır fakat sonuçları değerlendirilip, önlem alınmaz.
B. İşyerinde kaza araştırmaları yapılır, önlemler belirlenir fakat hayata geçirilmez.
C. İşyerinde kaza araştırmaları yapılır, önlemler belirlenir, hayata geçirilir fakat bu önlemler günü kurtarmak içindir.
D. İşyerinde kaza araştırmaları yapılır, önlemler belirlenir ve hayata geçirilir, bu önlemlerin amacı kök nedeni ortadan kaldırmaktır.
E. İşyerinde kaza araştırmaları yapılır, önlemler belirlenir ve hayata geçirilir, sonuçlar sadece gerçekleşen kaza özelinde değerlendirilmez, yaygınlaştırılır ve bir daha başka alanlarda da bu tip kazaların yaşanması engellenir.

14. Aşağıdaki ifadelerden hangisi gerçekleşen olaylardan (G.Durum/G.Davranış/Ramak Kala/Kazaların) dersler çıkarmak konusunda işyerinizi tanımlar?

A. İşyerinde yaşanan kazalardan sonra herhangi bir ders çıkarılmaz ve değişimler teşvik edilmez.
B. İşyerinde yaşanan kazalardan sonra sadece o kaza özelinde dersler çıkartılmaya çalışılır ve bunlar genellikle sistem değil kişi bazlıdır. Bu kazalar yeniden gerçekleşebilir.
C. İşyerinde yaşanan kazalardan ders çıkarılması adına sistemler mevcuttur fakat çıkartılan bu dersler tüm çalışanlarla paylaşılmaz, değişim kararları genellikle sadece yaşanan olay üzerinden şekillenir.
D. İşyerinde yaşanan kazalardan sonra dersler çıkarılır ve tüm çalışanlara aktarılır. Gerekli değişiklikler kök nedeni ortadan kaldırmaya yoğunlaşır ve bu değişimler gelecek planlarında kullanılır.
E. Sadece işyerinde değil dışarıda (genellikle benzer iş kolunda ki şirketlerde) yaşanan kazalardan da dersler çıkarılır ve bulgular tüm çalışanlara aktarılır. Alınan önlemler ile benzer nedenlerden oluşabilecek olayların önüne geçilir.

15. Aşağıdaki ifadelerden hangisi gerçekleşen olaylardan (G.Durum/G.Davranış/Ramak Kala/Kazaların) alınacak önlemlere ve yapılacak değişikliklere karar verme konusunda işyerinizi tanımlar?

A. İşyerinde gerçekleşen kazalar sonrasında alınacak önlemlere sadece üst yönetim kendi kendine karar verir.
B. İşyerinde gerçekleşen kazalar sonrasında alınacak önlemlere üst yönetim ve İSG Birimi karar verir.
C. İşyerinde gerçekleşen kazalar sonrasında alınacak önlemlerin belirlenmesi sürecine üst yönetim ve İSG Birimi dışında şefler ve posta başları da (ilk amirler) dahil olurlar. Çalışanlar bu sürece dahil edilmez.
D. İşyerinde gerçekleşen kazalar sonrasında alınacak önlemlere hem üst yönetim, İSG sorumluları ve ilk amirler hem de çalışanlar katılımı ile oluşturulmuş bir ekip karar verir.
E. İşyerinde gerçekleşen kazalar sonrasında alınacak önlemlerin belirlenmesinde katılımcı bir politika izlenir ve hem üst yönetim, İSG Birimi ve ilk amirler ve çalışanlar hem de ziyaretçiler, taşeronlar, danışmanlar, dahil edilir.

16. Aşağıdaki ifadelerden hangisi bilgi akışı konusunda işyerinizi tanımlar?

A. İşyerinde çalışanlara sadece yasal olarak zorunlu olan bilgilendirmeler yapılır.

B. İşyerinde çalışanlara yasal olarak zorunlu bilgilendirmeler dışında sadece şirket iç prosedürleri hakkında bilgilendirme yapılır. Bu bilgilendirmeler sadece yazılı olarak aktarılır.

C. İşyerinde bilgi akışı tek taraflıdır ve üst yönetimden aşağı doğru işler. Yasal zorunluluk ve şirket prosedürleri dışındaki bilgilendirmeler, sadece herhangi bir olay yaşandıktan sonra o olaya dahil olan kişilere aktarılır. Genel bir bilgi aktarımı yapılmaz. İşyerinde bilgi akşını sistemi mevcuttur fakat bu sistemler düzenli olarak gözden geçirilmez ve denetlenmez.

D. İşyerinde bilgi akış sistemi mevcuttur ve bu sistemler düzenli olarak gözden geçirilip denetlenir. Bilgi akışına zorunlu olmayan bilgilendirici konular da eklenir fakat bu konular şirket için olaylar ile sınırlıdır.

E. İşyerinde bilgi aktarımı açık ve şeffaf bir şekilde oturtulmuştum. Her kademeden çalışan İSG ile ilgili bilgilerden haberdar olabilir. Bilgi akışı sadece resmi bir yazı diliyle değil, toplantılar, eğitimler gibi organizasyonlarla desteklenir. Bilgi akışına şirket dışı olaylarda dahil edilir. Açık İSG iletişimi mevcuttur, deneyimler paylaşılır, yenilikçi fikirler teşvik edilir.

17. Aşağıdaki ifadelerden hangisi İSG iletişimi konusunda işyerinizi tanımlar?

A. İşyerinde İSG iletişimi sadece üst yönetim arasında gerçekleşir, tek taraflıdır ve çalışanlar riskler hakkında konuşamaz, üst yönetime ulaşılmaz ve riskler konusunda fikir beyan edilemez.

B. İşyerinde İSG iletişimi orta düzey yöneticiler (Birim Yöneticisi veya Bölüm müdürü) arasında gerçekleşir ve çalışanlar yüksek riskler hakkında konuşabilir.

C. İşyerinde İSG iletişimi riskle ilgili şefler ve postabaşı seviyesinde gerçekleşir ve çalışanlar sadece orta ve yüksek riskler hakkında konuşabilir.

D. İşyerinde İSG iletişimi çalışanların katılımı ile tartışılır, orta ve yüksek düzey riskler ile ilgili fikir beyan edebilir, fikirler üst yönetim tarafından dinlenir ve hayata geçirilir. İSG iletişimi mevcuttur, gündemini çalışanların belirlediği bilgilendirme ve risk yönetimi toplantıları yapılır.

E. İşyerinde İSG iletişimi çalışanların iletişim eşitliği esasına sahiptir, tüm çalışanlar bütün riskler hakkında fikir beyan edebilir ve dinlenirler. Yönetimler çalışanlarında öğrenir, takdir eder ve şeffaflık esastır. Açık İSG iletişimi mevcuttur, herkes birbirinin deneyimlerinde öğrenmeye açıktır ve deneyimler paylaşılır, yenilikçi fikirler teşvik edilir.

18. Aşağıdaki ifadelerden hangisi çalışanların İSG konularında desteklenmesi açısından işyerinizi tanımlar?

A. İşyerinde çalışanlar İSG konularında desteklendiklerini genelde hissetmezler, çalışanlar herhangi bir şikayet veya önerilerini üstlerine iletmekten çekinirler.

B. İşyerinde çalışanlar İSG konularında desteklendiklerini nadiren hisseder, herhangi bir şikayet veya önerilerini sadece İSG Birimine iletebilirler fakat bir sonuç alacaklarına inanamazlar.

C. İşyerinde çalışanlar İSG konularında desteklendiklerini zaman zaman hisseder, şikayet ve önerilerini ilk amirleri ve İSG Birimine iletebilirler, nadiren sonuç alacaklarına inanırlar.

D. İşyerinde çalışanlar İSG konularında desteklendiklerini hisseder, şikayet ve önerilerini iletmekten çekinmezler, sonuç alacaklarına inanırlar.
E. İşyerinde çalışanlar İSG konularında desteklendiklerini her zaman hisseder, her an şikayet ve önerilerini yönetim ile paylaşabileceklerini düşünürler, sonuç alacaklarına inanırlar ve bu önerileri için takdir edilirler.

19. Aşağıdaki ifadelerden hangisi çalışanların görev tanımlarına ve performans değerlendirmelerine yaklaşım konusunda işyerinizi tanımlar?

A. İşyerinde çalışanlar için hazırlanmış açık ve net bir görev tanımı bulunmaz.
B. İşyerinde çalışanlar için hazırlanmış açık ve net bir görev tanımı bulunur ancak bu görev tanımında İSG sorumlulukları yer almaz.
C. İşyerinde çalışanlar için hazırlanmış açık ve net bir görev tanımı bulunur ve bu görev tanımında İSG sorumluluklarına yer verilmiştir.
D. İşyerinde çalışanlar için hazırlanmış açık ve net bir görev tanımı bulunur, bu görev tanımında İSG sorumluluklarına yer verilmiştir ancak performans sadece asıl iş bazında değerlendirilir ayrıca İSG performansı değerlendirilmez.
E. İşyerinde çalışanlar için hazırlanmış açık ve net bir görev tanımı bulunur, bu görev tanımında İSG sorumluluklarına yer verilmiştir ve performans değerlendirmesinde İSG performansı önemli yer tutar.

20. Aşağıdaki ifadelerden hangisi çalışanların iyilik hali yaklaşımı konusunda işyerinizi tanımlar?

A. İşyerinde çalışanların iyilik hali ile ilgilenilmez.
B. İşyerinde çalışanların sadece fiziksel (bedensel) iyiliği ile ilgilenilir.
C. İşyerinde çalışanların fiziksel (bedensel) ve sosyal iyiliği ile ilgilenilir. Sosyal iyilik ilgili olarak kısıtlı programlar vardır.
D. İşyerinde çalışanların fiziksel, sosyal ve ruhsal (psikolojik) iyiliği (bütün olarak) ile ilgilenilir fakat destekleyici programlar yeterli değildir
E. İşyerinde çalışanların fiziksel, sosyal ve ruhsal (psikolojik) iyilik hali ile ilgilenilir, bu konular ile ilgili destekleyici programlar oluşturulur ve uygulamaya geçirilir. Psikolojik destek programları gizlilik esasına dayanır ve konular sadece çalışanların üstlerini iletilmesini talep ettiği durumlarda ilgili kişilerle paylaşılır ve çözüm üretilir.

21. Aşağıdaki ifadelerden hangisi çalışanların İSG Eğitimleri konusunda işyerinizi tanımlar?

A. İşyerinde çalışanlar için İSG eğitimleri gerçekleştirilmez.
B. İşyerinde çalışanlar için İSG eğitimleri sadece yasal olarak zorunlu eğitimler kapsamında formalite icabı gerçekleştirilir.
C. İşyerinde çalışanlar için İSG eğitimleri yasal olarak zorunlu eğitimler ile sınırlı kalmaz, yapılan işin risklerine dair ek eğitimler gerçekleştirilir.
D. İşyerinde çalışanlar için İSG eğitimleri hem sınıf hem de elektronik olarak gerçekleştirilir, sürekli tekrarlanan işbaşı eğitimleri ile farkındalık arttırma çalışmaları yapılır.
E. İşyerinde çalışanlar için İSG eğitimleri birçok farklı şekilde (sınıf ortamı, elektronik ortam, işbaşı eğitimleri) ve birçok farklı konuda düzenli olarak gerçekleştirilir, eğitimin başarısı ölçülür ve ziyaretçiler, taşeronlar vb. bu eğitimlere dâhil edilir. Her olay bir eğitim fırsatı olarak değerlendirilir ve eğitim şirket kültürünün bir parçası haline gelmiştir.

22. Aşağıdaki ifadelerden hangisi yönetimin İSG Eğitimlerine bakışı konusunda işyerinizi tanımlar?

A. İşyerinde yönetim üretim önceliklidir ve İSG eğitimlerini zaman kaybı olarak görür bu yüzden eğitime bütçe ayırmaz.
B. İşyerinde yönetim üretimi aksatmamak şartıyla İSG eğitimi verilmesini kabul eder, eğitime çok az bütçe ayırır ve eğitim performansını önemsemez.
C. İşyerinde yönetim İSG eğitimine bütçe ayırır, İSG eğitimin önemli bir konu olduğunu çalışanlar ile paylaşır fakat kendisi eğitimlere dâhil olmaz.
D. İşyerinde yönetim için İSG eğitimi öncelikli konulardan biridir ve bunu çalışanlara yansıtır ayrıca eğitimlere zaman zaman dâhil olur.
E. İşyerinde yönetim için İSG eğitimi en öncelikli konulardandır ve bunu çalışanlara yansıtır ayrıca eğitimlere çoğunlukla dâhil olur.

23. Aşağıdaki ifadelerden hangisi İSG Eğitim ihtiyaçlarının belirlenmesi konusunda işyerinizi tanımlar?

A. İşyerinde İSG eğitim ihtiyaçlarının belirlenmesinde sadece yönetim söz sahibidir ve çalışanların görüşü alınmaz.
B. İşyerinde İSG eğitim ihtiyaçlarının belirlenmesinde yönetim ve İSG Birimi söz sahibidir ve çalışanların nadiren görüşü alınır.
C. İşyerinde İSG eğitim ihtiyaçlarının belirlenmesinde mevcut ihtiyaçlara göre oluşturulmuş bir ekip (yönetim, İSG Birimi ve ilk amirler) söz sahibidir ve çalışanların görüşü zaman zaman alınır, çalışanlar eğitim talep edebilir ancak bu talepler genellikle değerlendirilmez.
D. İşyerinde İSG eğitim ihtiyaçlarının belirlenmesinde işyerinde her kademeden çalışanların görüşü alınır, eğitim talep etme hakları vardır, talepler ciddiye alınır ve genellikle karşılanır.
E. İşyerinde İSG eğitim ihtiyaçlarının belirlenmesinde çalışanların görüşleri alınır, talepleri değerlendirilir ve karşılanır. Çalışanlar kendi eğitim programlarını belirlemek için görüş bildirebilir ve bunun için takdir edilirler.

24. Aşağıdaki ifadelerden hangisi İSG konularında takım çalışması konusunda işyerinizi tanımlar?

A. İşyerinde İSG konularında tüm çalışanlar tek başına çalışır ve takım çalışmasına açık bir yapı yoktur.
B. İşyerinde belirli sorunları çözmek için İSG takımları oluşturulur, sorun çözülünce takım dağılır ve yönetim bu takımları desteklenmez. Çalışanlar bu takımlar içinde yer almaz.
C. İşyerinde İSG konularında çalışmak üzere oluşturulmuş bir takımlar mevcuttur ancak bu takımlara çalışan katılımı ve desteği az, bilgi paylaşımı sınırlıdır. Bu takımlar risk değerlendirmesine katkıda bulunmazlar.
D. İşyerinde İSG konularında çalışmak üzere oluşturulmuş takımlar vardır ve bu takımlar içinde çalışanlarda yer alır. Takımlar risk değerlendirmesine sınırlı oranda katkı sağlar. Bu takımlar iş birliği ve uyum içinde çalışır fakat takımların performansları değerlendirilmez.
E. İşyerinde İSG konularında çalışmak üzere oluşturulmuş takımlar vardır ve bu takımlar içinde çalışanlarda yer alır. Takımlar risklerin belirlenmesinde önemli rol oynar ve iş birliği ve uyum içinde çalışırlar. Üst yönetimden desteklenir ve takdir edilirler. Takımların performansları değerlendirilir ve gerektiğinde değişiklikler yapılır.

25. Aşağıdaki ifadelerden hangisi İSG konularında takım çalışmasında çalışanların rolleri ve sürece bağlılıkları konusunda işyerinizi tanımlar?

A. İşyerinde İSG konularında çalışan takımlar içinde çalışanların görevleri belirlidir ve ast üst ilişkisine uygundur ve değişmez. Takım birbirine bağlı değildir. Sadece göstermelik bir yapı olarak kurulmuştur.

B. İşyerinde İSG konularında çalışan takımlar içinde çalışanların görevleri belirlidir ve takım içinde ast üst ilişkisi mevcuttur. Takımlar yönetim tarafından bir lider etrafında toplanmış çalışanlardır ve yönlendirilemeyen bir grup insan gibidirler.

C. İşyerinde İSG konularında çalışan takımlar içinde çalışanların görevleri belirlidir ve takım kendi içerisinde birbirine bağlıdır ancak diğer diğer takımlarla iş birliği içerisinde çalışmazlar. Takımların birbirleriyle iletişimi (bilgi ve fikir paylaşımı) çok azdır.

D. İşyerinde İSG konularında çalışan takımlar içinde çalışanların görevleri belirlidir ancak ihtiyaca göre takım içerisinde ve görevlerde değişiklikler yapılabilir ve bu takımlar hem kendi aralarında bağlıdır hem de diğer takımlarla iş birliği içerisinde çalışırlar.

E. İşyerinde İSG konularında çalışan takımlar içinde çalışanların görevleri belirlidir ve takım içinde herkes eşit değer ve rol alır, tüm çalışanlar da aslında bu ekiplerin bir parçası olduğunun farkındadır.

B. Final version of the questionnaire with respected dimensions and aspects

Dimension	Aspect	Questions
Dimension 1. Commitment to overall continuous improvement about safety	**Aspect 1: Commitment to continuous improvement about safety**	Which of the following statements defines your workplace in terms of actions taken to improve safety? A. Neither budget nor time is never allocated to improve safety. B. Budget and time are allocated to improve safety only after the occurrence of an undesirable incident in order to minimize the effects of the incident. Both budget and time are very limited. C. Budget and time are allocated to improve safety before special situations such as legal audits in order to appear good. Both budget and time are limited. D. Budget and time are allocated to improve safety in order to ensure a healthy and safe workplace. Both budget and time are of medium scale. E. Both budget and time are always available to improve safety and are allocated to reduce all relevant risks. Both budget and time can be considered to be of large-scale.
	Aspect 2: Inspection / audit	Which of the following statements defines your workplace in terms of safety audits? A. Safety audits are not done or are done very scarcely without attention, the findings of the audit are not taken into consideration. B. Safety audits are done after undesired incidents or before legal audits, these audits are only for show and do not reflect the actual needs of the company. C. Safety audits are done regularly only by upper management; however these audits are not done in accordance with company needs, audit findings are evaluated only to save the day after the occurrence of an incident. D. Safety audits are done with participation from upper management and superintendents/foremen (first supervisors), precautions taken according to the audit results are actually aimed towards improving safety. E. Safety audits are done with participation of upper management, supervisors, and workers.

		These audits are result-oriented, and precautions are planned and implemented according to the audit results. Upper management, supervisors and workers take part in the planning and implementation processes.
Dimension 1. Commitment to overall continuous improvement about safety	**Aspect 3: Written policies and procedures**	Which of the following statements defines your workplace in terms of safety policy and procedures? A. Safety policy and procedures have not been formed in the workplace. B. There is a safety policy and many relevant procedures, however the policy is not up-to-date and is implemented only when an incident occurs. C. There is an up-to-date safety policy and many written procedures, however these are only kept as prepared documents and their implementation is insufficient. D. The safety policy and relevant procedures have been formed by upper management and the safety department and are regularly reviewed. The policy and procedures are utilized to improve overall safety. E. The safety policy and procedures have been formed with the contribution of upper management, the safety department, and workers. They have been internalized by everyone and because safety has become a way of life for all workers, there is less need for a safety policy and procedures.

	Aspect 4: Management commitment	Which of the following statements defines your workplace in terms of management commitment to safety? A. Upper management does not have a perception of safety and does not give the necessary importance to safety. They perceive safety related issues as a loss of time and money. B. Upper management has slowly begun to have a perception of safety, but it is not sufficient. Workers do not believe that upper management is sensitive regarding safety-related issues; they believe that they allocate money and time only due to legal requirements. C. Upper management believes that they have formed a safety culture, but this belief is not shared by the workers. The workers still perceive that the priority of the upper management is production. Upper management gets involved with safety-related processes only when a serious incident occurs. D. Whenever a health or safety related problem arises (does not have to be serious), upper management takes action and resolves the problem in a fast and determined manner. Upper management has also begun to take part in non-problematic safety processes. E. The safety perception of upper management is of high-level. Upper management takes part in all processes in order to implement the necessary measures so as to provide and improve the health and safety conditions; upper management also follows and evaluates the precautions taken.
Dimension 2. Priority given to safety	**Aspect 5: Priority given to safety**	Which of the following statements defines your workplace in terms of safety priority? A. Safety issues are disregarded in the company. Production has high-level priority. B. Safety issues are disregarded in the company. Safety issues are brought to the agenda when undesired incidents occur and revert back to normal after some time has passed. C. Safety is considered in the company, but at an insufficient level. There are plans and procedures in place, but these are not regularly reviewed and are not up to date. Production

		pressure can lead to gaps/stretching in safety issues. D. Safety priority is high in the company and is effectively supported with updated safety necessities. Production pressure does not reduce the priority given to safety issues. E. Safety is one of the most prioritized issues in the company. Production priority always comes after safety priority. Worker safety priority comes before everything else and everybody is aware of "Safety First" when starting all work.
Dimension 2. Priority given to safety	**Aspect 6: Safety-related Responsibilities**	Which of the following statements defines your workplace in terms of safety responsibilities? A. Safety responsibilities have not been defined in the workplace. B. Safety responsibilities have been defined only for the workers and are perceived as an imposition of the upper management. C. Safety responsibilities have been defined only for the workers and supervisors and are perceived as an imposition of the upper management. D. Safety responsibilities have been defined for the workers, supervisors and the people from safety department. Upper management has not been included in these responsibilities. E. Safety responsibilities have been defined for all stakeholders (subcontractors, workers, interns, safety department, upper management etc.).
	Aspect 7: Risk management	Which of the following statements defines your workplace in terms of risk assessment? A. Work related risks are generally not assessed. B. Work related risks are only assessed after an undesired incident and this assessment is generally only for show. Risks are ignored in cost-requiring situations. C. Assessment of work-related risks is the job of only the safety department and complete coverage of all groups that may be affected is not observed. D. In the process of assessing work related risks, risks that not only affect the workers, but also the subcontractors, visitors etc. are also assessed and precautions are taken according to the identified risks.

		E. All workers take part in the risk assessment process. All work-related risks are assessed, and all workers try to find ways to reduce risks as well as support in identifying and implementing necessary precautions.
Dimension 3. Perceptions of the causes of safety incidents	**Aspect 8: Blame culture**	Which of the following statements defines your workplace in terms of approach to causes of occurred incidents (accidents)? A. It is believed that the causes of incidents (accidents) in the workplace are due to misfortune and that they cannot be controlled. B. It is believed that the causes of the incidents (accidents) in the workplace are due to the workers and control methods are re-training and disciplinary measures. Workers are blamed for incidents (accidents). C. Upper management claims to think that the incidents (accidents) in the workplace may be caused by systematic errors other than workers (machines/equipment/work environment), but the workers do not see this to be as clear and fair as upper management believes. D. It is believed that the causes of incidents (accidents) in the workplace are a combination of workers and system errors and workers take part in the reviewing processes for controlling the systems. E. Even if the causes of the incidents (accidents) in the workplace are due to workers, awareness of systematic errors is of high-level. Workers involved in the accident are always supported for open and safe communication, and the necessary precautions for control are implemented so as to cover all work processes.
Dimension 4. Investigating health and safety incidents	**Aspect 9: Reporting system and its usage**	Which of the following statements defines your workplace in terms of notification of occurred incidents (unsafe conditions/unsafe acts/near misses/accidents)? A. There is no system for the notification (reporting) of occurred incidents (unsafe conditions/unsafe acts/near misses/accidents) in the workplace. B. There is an undeveloped system for the notification (reporting) of occurred incidents (unsafe conditions/unsafe acts/near misses/accidents) in the workplace, it is generally not used. Incidents (accidents) are swept under the rug if possible.

		C. There is a system for the notification (reporting) of occurred incidents (unsafe conditions/unsafe acts/near misses/accidents) in the workplace but it is just for show. The purpose of the system is to complete the forms. D. There is an electronic reporting system for the notification (reporting) of occurred incidents (unsafe conditions/unsafe acts/near misses/accidents) in the workplace that allows for nameless reporting and one of the purposes of this system is to increase risk awareness. E. There is an instantaneous, electronic, accessible and easy-to-use system for the notification (reporting) of occurred incidents (unsafe conditions/unsafe acts/near misses/accidents) in the workplace that allows for nameless reporting and this system is used to prevent the occurrence of undesired incidents. The notification (reporting) system consists of trust and transparency.
Dimension 4. Investigating health and safety incidents	**Aspect 10: Staff feeling on reporting**	Which of the following statements defines your workplace in terms of the perception of workers during the notification of occurred incidents? A. Workers are not encouraged to report incidents and they avoid reporting out of fear that they will be blamed when they report an incident. B. Workers are not encouraged to report incidents and they only tentatively reporting large-scale incidents within sight. C. There are efforts to encourage workers to report incidents in the workplace, however the workers do not feel safe while reporting of an incident. D. Workers are encouraged to report incidents in the workplace and the workers feel safe while reporting; the incidents that are reported are evaluated as opportunities for improvement. E. Workers are accustomed to report about incidents in the workplace, they have comprehended the importance of reporting an incident and they take an active role in all processes after the reporting.
	Aspect 11: Focus of investigation / investigation system	Which of the following statements defines your workplace in terms of the investigations conducted after an occurred incident (unsafe conditions/unsafe acts/near misses/accidents) in the workplace? A. Incidents (accidents) that occur in the workplace are not investigated, or

		superficially investigated to close off the incident. B. Investigations of accidents that occur in the workplace are only done for serious accidents and only for show, they generally focus on the worker that was involved in the accident and the purpose is to fulfill legal obligations. C. All incidents that occur in the workplace are investigated, there is a detailed procedure for incident investigation, however, the main purpose of the investigation is not to find the actual cause but to carry out the procedure and finalize the investigation. D. All incidents that occur in the workplace, including near misses, are investigated, there is a detailed procedure for incident investigation and the purpose of this investigation is to find the actual cause and to learn lessons from the incident. The results of the investigation are shared with the workers on a large scale. E. All incidents that occur in the workplace, including near misses, are systematically investigated (using academic and known methods). There is a detailed procedure for incident investigation and the purpose of the investigation is not to find the guilty but to reach the actual reason of the incident. Incident investigation procedures are fully implemented, and these procedures are regularly reviewed and updated.
Dimension 4. Investigating health and safety incidents	**Aspect 12: Who is doing the investigations?**	Which of the following statements defines your workplace in terms of the people that conduct the investigation after an occurred incident (unsafe conditions/unsafe acts/near misses/accidents) in the workplace? A. Investigations of accidents that occur in the workplace are conducted haphazardly by an inexperienced supervisor. B. Investigations of accidents that occur in the workplace are conducted by safety professionals only in regard to the specific accident. C. Investigations of accidents that occur in the workplace are conducted by a team consisting of the people form safety department (safety professionals, doctors, psychologist, support personnel etc.) and only in regard to the specific accident. D. Investigations of accidents that occur in the workplace are conducted by a team consisting

		of supervisors, people from the safety department, and upper management. E. Investigations of accidents that occur in the workplace are conducted by a team consisting of supervisors, people from the safety department, upper management and participation by the workers. There is involvement from every group within the workplace in the accident investigation team.
	Aspect 13: Results of investigation	Which of the following statements defines your workplace in terms of the results of the investigation after an occurred incident (unsafe conditions/unsafe acts/near misses/accidents) in the workplace? A. Accident investigations are conducted in the workplace; however the results are not evaluated and relevant precautions are not taken. B. Accident investigations are conducted in the workplace; precautions are identified but not implemented. C. Accident investigations are conducted in the workplace, precautions are identified and implemented, however these are only to save the day. D. Accident investigations are conducted in the workplace, precautions are identified and implemented, the purpose of these precautions is to eliminate the root cause. E. Accident investigations are conducted in the workplace, precautions are identified and implemented, the results are not only evaluated in regard to the specific accident, but also extended to other areas so as to prevent the occurrence of such types of accidents.

Dimension 5. Organizational learning following a safety incident	**Aspect 14: Learning from safety incidents**	Which of the following statements defines your workplace in terms of lessons learned from occurred incidents (unsafe conditions/unsafe acts/near misses/accidents) in the workplace? A. There are no lessons learned after accidents that occur in the workplace and changes are not encouraged. B. After an accident occurs in the workplace, there is an effort to learn lessons but only in regard to that specific accident and these are generally not systematic but individual-based. These accidents may reoccur. C. There are systems in order to learn lessons from accidents that occur in the workplace, however these lessons learned are not shared with all workers. Decisions for change are generally shaped only based on the experienced incident. D. Lessons are learned from accidents that occur in the workplace and are shared with all workers. The necessary changes focus on eliminating the root cause and these changes are utilized in future plans. E. Lessons are learned from accidents not only within the workplace but also from outside the workplace (generally in companies operating in similar field of operation) and are shared with all workers. With the precautions taken, incidents that may arise from similar causes are prevented.
	Aspect 15: Change Management	Which of the following statements defines your workplace in terms of making decisions regarding precautions to be taken and changes to be made arising from occurred incidents (unsafe conditions/unsafe acts/near misses/accidents) in the workplace? A. Upper management decides by themselves upon the precautions to be taken after occurred incidents in the workplace. B. Upper management and the safety department make decisions regarding the precautions to be taken after occurred incidents in the workplace. C. Supervisors and foremen are also involved alongside upper management and the safety department in the process of determining the precautions to be taken after occurred

		incidents in the workplace. Workers are not part of this process. D. A team consisting of upper management, safety professionals, supervisors and workers decide upon the precautions to be taken after occurred incidents in the workplace. E. A participative policy is followed in the determination of precautions to be taken after occurred incidents in the workplace; upper management, the safety department, supervisors, workers, visitors, subcontractors and advisors are included in the decision-making process.
Dimension 6. Communication about safety issues	**Aspect 16: Information flow**	Which of the following statements defines your workplace in terms of flow of information? A. Workers are informed of only legally obligatory information in the workplace. B. Workers are informed of only legally obligatory information and company internal procedures in the workplace. These are only relayed in writing. C. Information flow in the workplace is single-sided and operates downward from upper management. Information other than those that are legally obligatory, and company internal procedures are shared only after an incident occurs and only to the personnel involved in the incident. A general sharing and flow of information do not take place. There is a system for flow of information in the workplace, however these systems are not regularly reviewed and audited. D. There is a system for flow of information in the workplace, and these systems are regularly reviewed and audited. Non-obligatory informative subjects are also added to the information flow; however, these subjects are limited to incidents for the company. E. Information flow in the workplace has been set in an open and transparent way. Workers from all levels can be informed of safety-related information. Flow of information is supported not only with official writing, but also with organizations such as meetings and trainings. Subjects external to the workplace are also included in the flow of information. Open safety communication is present,

		experience is shared, innovative ideas are encouraged.
Dimension 6. Communication about safety issues	**Aspect 17: Safety communication**	Which of the following statements defines your workplace in terms of safety communication? A. Safety communication in the workplace occurs only between upper management; it is single-sided, and workers cannot talk about risks, reach upper management or submit ideas regarding risks. B. Safety communication in the workplace occurs between mid-level managers (department or unit managers) and workers can talk about high-level risks. C. Safety communication in the workplace occurs at the level of supervisors regarding risks and workers can only talk about mid-level and high-level risks. D. Safety communication in the workplace is discussed with participation from workers; workers can submit ideas regarding mid-level and high-level risks, such ideas are regarded and realized by upper management. There is safety communication in the form of risk management meetings where the agenda is decided by the workers. E. Safety communication in the workplace has the principle that all workers have equality in communication; all workers are able to submit ideas and are heard regarding all risks. Management learns from the workers, appreciates them and transparency is key. There is open safety communication where everyone is open to learning from each other's experiences and where experiences and innovative ideas are encouraged.
Dimension 7. Personnel management and safety issues	**Aspect 18: Do the staffs feel supported?**	Which of the following statements defines your workplace in terms of workers being supported regarding safety issues? A. Workers in the workplace generally do not feel supported regarding safety issues, workers refrain from submitting their complaints or suggestions to their supervisors. B. Workers in the workplace rarely feel supported regarding safety issues, they are able to submit their complaints or suggestions only to the safety department, but do not believe that they will get any results.

		C. Workers in the workplace occasionally feel supported regarding safety issues, they are able to submit their complaints and suggestions to their supervisors and the safety department, and they rarely believe that they will get results. D. Workers in the workplace feel supported regarding safety issues, they do not refrain from submitting their complaints and suggestions, and they believe that they will get results. E. Workers in the workplace always feel supported regarding safety issues, they believe that they can share their complaints and suggestions with management at all times, they believe that they will get results and they are appreciated for their suggestions.
	Aspect 19: Work description /recruitment/ performance evaluation	Which of the following statements defines your workplace in terms of the approach towards worker job descriptions and performance evaluation? A. There are no clear and precise job descriptions prepared for workers in the workplace. B. There are clear and precise job descriptions prepared for workers in the workplace, but safety responsibilities are not included in these job descriptions. C. There are clear and precise job descriptions prepared for workers in the workplace and safety responsibilities are also included in these job descriptions. D. There are clear and precise job descriptions prepared for workers in the workplace and safety responsibilities are also included in these job descriptions; however, performance is evaluated only based on the main job, safety performance is not evaluated separately. E. There are clear and precise job descriptions prepared for workers in the workplace and safety responsibilities are also included in these job descriptions; safety performance is an important element in performance evaluation.
	Aspect 20: Wellbeing	Which of the following statements defines your workplace in terms of approach towards the wellbeing of workers? A. The wellbeing of workers is not considered in the workplace.

		B. Only the physical wellbeing of workers is considered in the workplace. C. The physical and social wellbeing of workers are considered in the workplace. There are limited programs regarding social wellbeing. D. The physical, social and mental (psychological) wellbeing of workers are considered in the workplace (as a whole); however, the supportive programs are insufficient. E. The physical, social and mental (psychological) wellbeing of workers are considered in the workplace, programs are formed and implemented regarding these issues. Psychological support programs are based on the principle of privacy and issues are shared with relevant people and solutions are found only if the workers request that they be conveyed to their supervisors.
Dimension 8. Staff education and training about safety issues	**Aspect 21: Training implementation**	Which of the following statements defines your workplace in terms of the safety training of workers? A. There are no safety trainings for workers in the workplace. B. Safety trainings for workers in the workplace are conducted only as a formality to be in accordance with obligatory legislative training requirements. C. Safety trainings for workers in the workplace are not limited to obligatory legislative trainings, but also include additional trainings on risks regarding conducted work. D. Safety trainings for workers in the workplace are conducted in classrooms as well as electronically; efforts to increase awareness are realized through continuously repeated toolbox trainings. E. Safety trainings for workers in the workplace are regularly conducted in many different ways (classroom, electronic medium, toolbox trainings) encompassing many different subjects; the success of the training is measured and visitors, subcontractors etc. are included in these trainings. Every incident is utilized as a training opportunity and training has become a part of company culture.

	Aspect 22: Management approach to safety trainings	Which of the following statements defines your workplace in terms of outlook towards safety trainings? A. Management in the workplace prioritizes production and safety trainings are seen as a waste of time, therefore no budget is allocated to training. B. Management in the workplace accepts the provision of safety training as long as it does not hinder production, a minimal budget is allocated to training and the performance of the training is not regarded. C. Management in the workplace allocates a budget to safety training, they convey that safety training is an important issue with workers, but do not attend the trainings themselves. D. Safety training is one of the most prioritized issues for management in the workplace, they reflect this understanding to the workers and occasionally attend the trainings. E. Safety training is one of the most important issues for management in the workplace, they reflect this understanding to the workers and attend most of the trainings.
Dimension 8. Staff education and training about safety issues	**Aspect 23: Training needs identification**	Which of the following statements defines your workplace in terms of identification of training needs? A. Only management has a say in the identification of safety training needs in the workplace and the opinion of the workers is not regarded. B. Management and the safety department have a say in the identification of training needs in the workplace and the opinion of workers is rarely regarded. C. A team (consisting of management, safety department, and supervisors) formed from current needs has a say in the identification of training needs in the workplace and the opinion of workers is occasionally regarded; workers may request certain trainings, but these requests are generally not taken into consideration. D. Opinions of workers from every level is regarded in the identification of safety training needs in the workplace, they have the right to request trainings, these requests are taken seriously and are generally realized.

		E. Opinions of workers are regarded for the identification of safety training needs in the workplace, their requests are considered and realized. Workers submit remarks in regard to forming their own training programs and they are appreciated for such actions.
Dimension 9. Team working around safety issues	**Aspect 24: Team structure**	Which of the following statements defines your workplace in terms of teamwork on safety issues? A. All workers in the workplace operate by themselves regarding safety issues and there is no open structure for teamwork. B. Safety teams are formed to solve certain problems in the workplace, the teams are disbanded when the problem is solved and management does not support these teams. Workers are not part of these teams. C. There are teams that have been formed for safety issues in the workplace, however worker involvement and support to these teams are minimal and information flow is limited. These teams do not contribute to risk assessments. D. There are teams that have been formed for safety issues in the workplace and workers are a part of these teams. These teams work in cooperation and harmony, but the performance of the teams is not evaluated. E. There are teams that have been formed for safety issues in the workplace and workers are a part of these teams. These teams play an important role in the identification of risks and they work in cooperation and harmony. They are supported and appreciated by upper management. The performance of the teams is evaluated, and changes are made when necessary.
	Aspect 25: The role of team member /engagement	Which of the following statements defines your workplace in terms of the roles and commitment of workers to the process in teamwork regarding safety issues? A. The roles of workers within teams working on safety issues in the workplace are determined, in accordance with superior-subordinate relationship, and unchanging. The team is not interdependent. It is formed only for show. B. The roles of workers within teams working on safety issues in the workplace are determined, and there is a superior-subordinate

		relationship within the team. The teams are workers that have gathered around a leader appointed by management and are like a group of unguided people. C. The roles of workers within teams working on safety issues in the workplace are determined and the teams are interdependent, however the teams do not work in cooperation with other teams. Communication between teams (sharing of information and ideas) is minimal. D. The roles of workers within teams working on safety issues in the workplace are determined, however changes may be made within the team and roles according to needs, these teams are both interdependent and work in cooperation with other teams. E. The roles of workers within teams working on safety issues in the workplace are determined, everyone on the team has equal value and roles, all workers are aware that they are part of these teams.

C. Ethical Permission

UYGULAMALI ETİK ARAŞTIRMA MERKEZİ
APPLIED ETHICS RESEARCH CENTER

ORTA DOĞU TEKNİK ÜNİVERSİTESİ
MIDDLE EAST TECHNICAL UNIVERSITY

DUMLUPINAR BULVARI 06800
ÇANKAYA ANKARA/TURKEY
T: +90 312 210 22 91
F: +90 312 210 79 59
ueam@metu.edu.tr

Sayı: 28620816 / 414

21 KASIM 2019

Konu: Değerlendirme Sonucu

Gönderen: ODTÜ İnsan Araştırmaları Etik Kurulu (İAEK)

İlgi: İnsan Araştırmaları Etik Kurulu Başvurusu

Sayın Prof.Dr. Mahmut PARLAKTUNA

Danışmanlığını yaptığınız **Ulaş Semih YETİK'in "Savunma Sanayinde Davranış Odaklı Güvenlik Yönetimi Yaklaşımının Organizasyonel Güvenlik Kültürü Üzerine Etkilerinin Araştırılması"** başlıklı araştırması İnsan Araştırmaları Etik Kurulu tarafından uygun görülmüş ve **394 ODTU 2019** protokol numarası ile onaylanmıştır.

Saygılarımızla bilgilerinize sunarız.

Prof. Dr. Tülin GENÇÖZ
Başkan

Prof. Dr. Tolga CAN
Üye

Doç.Dr. Pınar KAYGAN
Üye

Dr. Öğr. Üyesi Ali Emre TURGUT
Üye

Dr. Öğr. Üyesi Şerife SEVİNÇ
Üye

Dr. Öğr. Üyesi Müge GÜNDÜZ
Üye

Dr. Öğr. Üyesi Süreyya Özcan KABASAKAL
Üye