DEVELOPING A RUBRIC FOR UNDERSTANDING THE MATURITY OF SAFETY CULTURE IN LARGE-SCALE APPAREL MANUFACTURING ORGANISATIONS IN SRI LANKA

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Abstract: Occupational Health and Safety (OHS) in large-scale apparel manufacturing organisations has received increasing attention, yet most of the operational-level employees still lack sufficient safety awareness and knowledge on accident prevention, making them more vulnerable to workplace incidents. Since it could serve as an umbrella for safety-related issues, safety culture is one of the strategies for resolving them. This study aims to develop a rubric for understanding the safety culture maturity of the large-scale apparel manufacturing organisations in Sri Lanka. A comprehensive literature review was conducted to explore safety culture and its maturity. This study was based on Cooper's reciprocal safety culture model and Hudson's five-level safety culture maturity model. A qualitative approach was employed to achieve the research's aim, and the research strategy was chosen as an expert interview survey. Initially, two focus group interviews were conducted with industry experts in the field of OHS in the apparel industry. Four experts were participating in each meeting. The collected data were analysed using content analysis. The findings of the study present the developed rubric for understanding safety culture maturity.

Key Words: *Safety Culture; Safety Culture Maturity; Apparel Industry; Rubric; Occupational Health and Safety (OHS)*

1. Introduction

The apparel industry plays a significant role in the economic development of many countries, and it is fundamental to both the global economy and society. According to the Sri Lanka Export Development Board (2020) the global apparel market was valued at USD 527.1 billion in 2020. As one of the most rapidly expanding industries and a source of employment for millions, the apparel sector provides infrastructure facilities to the global economy (Singh & Khajuria, 2018)In the Sri Lankan context, the apparel industry is crucial to the country's economic structure, having been one of the primary drivers of economic growth(Kuruppu et al., 2021). Further, Embuldeniya (2015) stated that the apparel industry is the backbone of the Sri Lankan economy because it contributes significantly to the country's gross domestic product (GDP). Sri Lanka Export Development Board (2024)stated that the apparel industry earned USD 5.05 billion of export revenue in 2024. According to the Sri Lanka Export Development Board (2020) 350,000 people are employed directly in the Sri Lankan apparel industry, representing 15% of all industrial employment, and over 51% of them are employed in large-scale organisations. According to the Sri Lanka Standard Institution (2023) classification, organisations with more than 250 full-time employees are considered large-scale. Large-scale organizations are a suitable context for examining safety culture and risk management practices because they usually achieve higher OHS compliance due to greater resources, formalized procedures, and structured safety management systems (Dahl et al., 2022). Small and medium enterprises were excluded due to their limited resources and less structured OHS practices (Barbosa et al., 2019), which could introduce variability and make cross-organizational comparisons difficult.

However, Saravanan & Kumaraguru (2011) stated that the apparel industry is often seen as a safer place to work than other industries, such as construction. However, Legesse (2016) emphasised that the expansion of apparel manufacturing across several countries has brought with it workplace hazards. Some of these hazards are usually fast-moving, encompass moderately complex equipment with conveyors covering vast areas, require significant amounts of physical handling, and require human involvement (Thatshayini & Rajini, 2018). Due to the frequent incidents employees must deal with, workers in the apparel manufacturing industry may have to face several injuries daily (Talapatra & Rahman, 2016). Thatshayini & Rajini (2018) further stated that accidental hazards associated with the apparel industry include physical risks, including falling from height and puncture wounds, ergonomic risks consisting of poor posture, and Amirah et al. (2013) highlighted that exposure to hazardous materials, exposure to loud noises, mechanical risks, extreme heat, or unsanitary circumstances are some concerns. In Sri Lanka, also, several incidents were reported from the apparel industry, including a significant fire event that occurred at one of the well-known apparel organisations in the Board of Investment's export processing zone in Katunayake (Sustainability Report, 2017). In addition to that, most female apparel industry workers in Sri Lanka who work near Juki machines do not wear the proper headgear, which causes their hair to become tangled in the machines and often leads to skin ripping (Sunday Times, 2014).

Researchers found that several factors are associated with the occurrence and types of injuries when they consider the

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health and safety issues of the apparel sector (Habtu et al., 2014). When handling tools with sharp points, such as scissors, trimmers, tacking pins, needles, and other equipment, safety concerns must be addressed seriously(Asare et al., 2019). Habtu et al. (2014) highlighted the unsafe behaviours, including smoking at work, having sleeping disorders, being unsatisfied with the job, not using personal protective equipment and safety guards, poor participation in health and safety training, and not having regular supervision, all of which are associated factors contributing to the occurrence of occupational injuries. Mubashir (2023) stated that negative signs of a safe work environment represent fundamental issues that might cause a dangerous work environment.

Hence, Khoshakhlagh et al. (2017) highlighted that safety culture is one of the most efficient approaches to decreasing workplace accidents among employees. Safety culture is an overall definition of the organisational level where its occupants share common values regarding occupational health and safety, have an effective and beneficial attitude regarding OHS, apply the regulations, processes, and management techniques, and participate in building a workplace that is health and safety conscious (Feng et al., 2014). Cooper (2000) theoretically, the safety culture is defined as a component of organisational culture that influences employees' attitudes and actions with the organisation's ongoing performance in terms of health and safety. People would be encouraged to perform safe work and would not face consequences for performing unsafe work in organisations if safety were developed in the industry based on culture and habits, and this would mean that safety would be ongoing and long-lasting (Khoshakhlagh et al., 2017). Nordlöf et al. (2015) revealed that the implementation of safety is a part of the culture, belief, and inherent behaviour. Therefore, the presence of a positive safety culture in the organisation makes employees aware of the hazards, protects them from accidents, and discourages risky behaviours (Khoshakhlagh et al., 2017). On the other hand, higher maturity levels of safety culture might contribute to a reduction in the number of accidents (Baba et al., 2014).While studies emphasise the safety culture and its impact on OHS outcomes in several industries in Sri Lanka, such as safety culture among hospitals (Anjalee et al., 2019) and the rubber processing industry (Dissanayake & Fernando, 2015) limited research has been conducted specifically on safety culture in the apparel industry in Sri Lanka. Furthermore, research can be found regarding exploring safety culture maturity in some industries in Sri Lanka, such as the rubber processing industry (Dissanayake & Fernando, 2015). In contrast, research has generally not focused on the understanding of the maturity level of safety culture in Sri Lankan apparel manufacturing organisations to strengthen safety culture, especially for large-scale apparel organisations. This has so far prevailed as a worthy researchable area, and accordingly, the research question developed as “How to understand the maturity level of the safety culture of large-scale apparel manufacturing organisations in Sri Lanka?”

2. Literature Review

2.1 CONCEPT OF SAFETY CULTURE

Foster (2021) stated that a safety culture is an organisational culture that places a high level of importance on safety beliefs, values, and attitudes, and these are shared by the majority of people within the company or workplace. With the release of the Chernobyl nuclear disaster summary report by the International Nuclear Safety Advisory Group (INSAG), the idea of safety culture has been a part of organisational safety for a very long time (Guldenmund, 2010), and it revealed that one of the contributing elements to the worst nuclear power plant accident in history was a poor safety culture (Bisbey et al., 2021). Since then, several events at organisations have led to a great deal of additional discussion over safety culture (Cole et al., 2013). Reiman & Rollenhagen (2017) revealed that this concept's original goal was to emphasise and demonstrate how management, leadership, and so called human and organisational factors affect safety rather than only technological means being ultimately responsible for ensuring safety. It is an extremely crucial concept to enhance worker health and safety at work, since this will ultimately boost organisational performance (Liana et al., 2022).

2.2 SAFETY CULTURE MATURITY

Safety culture maturity refers to the development and progression of an organisation's safety culture over time (Pfeiffer et al., 2010). Stemn et al. (2019) argued that the safety culture maturity models have been applied to understand how organisations manage safety systems, perceptions, values, and beliefs. Westrum (1996) proposed a three-level maturity model based on the typology of an organisation's culture. This typology identifies three fundamental organisational stages, including pathological, bureaucratic, and generative (Westrum, 2004). The Table 1 shows the three levels of the Westrum (2004) model in a descriptive manner.

Table 1, Westrum’s three levels of maturity model

Type of Organisational stage	Characteristics
Pathological	• Information is hidden • Messengers are "shot" • Responsibilities are shirked • Bridging is discouraged • Failures are covered up • New ideas are actively crushed
Bureaucratic	• Information may be ignored

	• Messengers are tolerated • Responsibility is compartmentalised • Bridging is allowed but neglected • Organisation is just and merciful • New ideas create problems
Generative	• Information is actively sought • Messengers are trained • Responsibilities are shared • Bridging is rewarded • Failure causes inquiry • New ideas are welcomed

2.3 SAFETY CULTURE ASPECTS

Westrum's three-level model was later expanded to five levels and specifically tailored to the maturity of safety cultures by Reason (1997), Hudson (2001) and Fleming (2001). Moreover, Fleming (2001) developed a safety culture maturity model based on the concept of capability maturity model (CMM), including five levels of maturity of the safety culture such as emerging, managing, involving, cooperating, and 11 continually. This safety culture maturity model is only applicable to organisations that meet certain requirements, such as having an adequate safety management system in place, having a low accident rate due to technical malfunctions, adhering to health and safety regulations, and prioritising safety over avoiding legal repercussions (Goncalves Filho et al., 2010).

Hudson (2001) created a model for the development and maturation of organisational safety culture based on Westrum's and Reason's typologies. In this model, three levels of Westrum (2004) maturity levels and two additional levels were added as reactive and proactive, which were initially proposed by Reason (1997). The model consists of five safety culture maturity levels and replaces the term "bureaucratic" with "calculative." Then the five levels are represented as pathological, reactive, calculative, proactive, and generative(Filho et al., 2010). The maturity models have a conceptual overlap, such as aspects at discrete stages or maturity levels, with a description of characteristic performance at various levels of maturity (Pfeiffer et al., 2010). More than two-thirds of maturity models, 68%, were developed based on Westrum's model and adopted at five levels of maturity (Trinh & Feng, 2022). The model of Hudson (2001) is more suitable for use research than Fleming's model because in Fleming's model, it is constrained by some criteria (e.g., an adequate safety management system, technical failures not causing the majority of accidents, and the company being compliant with health and safety laws) which cause barriers for general use (Filho et al., 2010). According to Hudson (2001) this model, the levels of maturity of the safety culture as follows,

- Pathological: Safety is a problem caused by workers. The main drivers are the business and a desire not to get caught by the regulator.
- Reactive: organisations start to take safety seriously, but there is only action after incidents.
- Bureaucratic/Calculative: safety is driven by management systems, with many collections of data. Safety is still primarily driven by management and imposed rather than looked for by the workforce.
- Proactive: with improved performance, the unexpected is a challenge. Workforce involvement starts to move the initiative away from a purely top-down approach.
- Generative/Sustainable: There is active participation at all levels. Safety is perceived to be an inherent part of the business. Organisations are characterised by chronic unease as a counter to complacency.

2.4 SAFETY Culture ASPECTS AND ELEMENTS

The elements of safety maturity indicate not only how highly a company values safety, but whether the company has the behaviours that embrace safety as a core value. Safety culture covers three main aspects as shown in Figure 1.1, those are phsychological, behavioural and situational (Flynn et.al, 2010). Cooper's reciprocal model appears to provide the ideal framework, taking into account the three primary aspects of people (phsychological), behavioural, and organisational (situational) aspects (Cooper, 2000). (Cole et al., 2013) stated that applicable elements of safety culture might be measured separately or in combination using this reciprocal framework, which offers the capacity to do so.

- People/Phsychological Aspects: This aspect reflects employees' values, beliefs, and attitudes towards safety. It influences how much individuals genuinely care about and prioritise safety in their work environment.
- Behavioural Aspects: These are the visible actions and practices that show commitment to safety, including proactive risk awareness, safety training, and the proper use of protective equipment. Management and employee behaviour must consistently support a safety-first culture.
- Situational/Organisational Aspects**:** This focuses on the organisational systems and structures that support safety, such as policies, reporting procedures, and communication. A strong safety framework ensures everyone knows their role and encourages open dialogue and continuous improvement.

According to Table 3, (refer to Annex 1), the rubric was developed based on Cooper's reciprocal safety culture model (2000) and Hudson's five-level safety culture maturity model (2007). Elements of safety culture are identified under the three main aspects, namely phsychological, behavioural, and organisational, as introduced by Cooper (2000). Moreover, a total of 13 elements were identified for the rubrics.

3. Research Methodology

This study aims to develop a rubric for understanding the safety culture maturity of the large-scale apparel manufacturing organisations in Sri Lanka. Accordingly, the research question can be developed as " How to understand the maturity level of the safety culture of large-scale apparel manufacturing organisations in Sri Lanka?"

This study employs both Cooper's reciprocal model and Hudson's safety culture maturity model to develop the rubric. Cooper's model explores the reciprocal relationship between individual safety behaviors and organizational practices, emphasizing the mutual influence between worker behaviors and management actions. Hudson's model, on the other hand, evaluates overall safety culture maturity on a continuum from pathological to generative. The complementary use of these two models allows for a holistic analysis, capturing both behavioural patterns and organisational development in safety culture.

A comprehensive literature review was conducted to identify the safety culture models, levels of safety culture maturity, elements, and characteristics involved in safety culture, and a conceptual rubric for understanding safety culture maturity was developed. A qualitative research approach was used for this study. The two focus group interviews were conducted with this study to investigate safety culture maturity in the apparel manufacturing organisations. The two focus groups were conducted with experts who have experience and knowledge in occupational health and safety in the apparel industry, and the focus groups' composition allowed four (4) experts for each group who have the closest exposure to the safety culture of the apparel industrial organisation. The interviewees were selected using the judgmental sampling method, and experts were selected from different apparel organisations in Sri Lanka. The group of experts has over 10 years of experience in occupational health and safety and is familiar with safety culture and its maturity levels as presented in Table 2. The collected data were analysed using the content analysis of this study.

Table 2, Details of the experts

Focus Group	Respondent	Areas of expertise	Total Work experience (Years)
A	A1	Occupational health and safety in the apparel industry	20
	A2	Occupational health and safety in the apparel industry	11
	A3	Environment, health, and safety in the apparel industry	18
	A4	Occupational health and safety in the apparel industry	10
B	B1	Environment, health, and safety in the apparel industry	10
	B2	Occupational health, safety, and environmental management in the apparel industry	15
	B3	Occupational health and safety in the apparel industry	22
	B4	Compliance of sustainability, occupational health, and safety in the apparel industry	13

4. Research Findings

According to the literature findings, five levels of maturity in safety were identified, such as pathological, reactive, calculative, proactive, and generative. According to the opinions of all the respondents in both focus groups, the pathological level is no longer applicable to large-scale apparel manufacturing organisations in Sri Lanka. "*As per my opinion, I don't think a pathological level exists in current apparel industry practical scenarios because people have at least cared for safety after an accident happened*," said A1, who has experience of around 20 years in OHS in the field of apparel manufacturing organisation. Other experts (A2, A3, A4 and B3) also agreed with the opinion of A1.

4.1 PHSYCHOLOGICAL ASPECTS OF SAFETY CULTURE

4.1.1 Perception of the Importance of Safety

Perception of safety is a key factor in cultivating a safety culture in apparel organisations. Findings confirmed that it should begin from the top, as it varies across roles. B1, an OHS expert, stated, "*Think, if the management doesn't have a positive perception of safety values and beliefs, how is it possible to expect it from the bottom level of workers?*" This highlights the importance of positive perception among top management to guide others toward higher safety maturity. B3 gave an example: "*We have a lifting machine in the warehouse that can lift to 1000 kg of weight. We normally lift it to a 10-metre distance. This machine has been made with proper safety mechanisms like hydraulic breaks, mechanical breaks, etc., so the management believes that there is no possibility of an accident occurring with this machine*." He further stated that, "*Hence,*

the operator also had no perception or idea of the risk of breaking the bucket, but one day, the lifting bucket (weighing 1000 kg) of this machine was broken, and the operator was severely injured."

All participants shared similar cases, emphasising that safety should be prioritised. At the reactive level, safety only becomes a focus after incidents. A2 stated that, "*If a finger is injured from a needle because of the wrong position of sewing, then after that accident occurs, the worker will be concerned about that type of risk, like wearing finger guards to avoid these accidents*." Respondents noted that safety is followed only under management supervision, often due to fear of losing jobs. Frequent staff turnover is high at this level. A2, supported by A1 and A3, stated, "*When considering most of the cases, especially in zones, the employees have opportunities to transfer to another field; in that sense, workers do not remain in their positions for a long period of time. The people remain in the industry until they reach a reactive level of safety culture*."

International standards help prevent stagnation at the reactive level. A2 explained, "*If it is a branch of a multinational apparel organisation, they have a set of quality rules and safety standards, so every part of that organisation should follow those to reach that standard level*." Without such influence, many stay reactive.

Peer pressure is negative at this stage. B3 said, "*Peer pressure in safety means that if the workers of the organisation are already working safely, then peer pressure will keep most people in that group in line and it will become "norm," , but if the group of workers is working unsafely, then peer pressure will tend to force more and more workers to behave unsafely in an attempt to fit in*." At the calculative level, only a few develop a positive safety perception through long-term experience. A1 noted, "*There are plants in Sri Lanka, like those in Batticaloa and Rabukkana. Workers in this sector stay in the same field for extended periods of time because there are fewer job opportunities and career transition chances in the area. As a result, they progressively reach the calculative level of safety culture with years of experience*." Group B noted that external factors like legal and customer demands also drive perception at this level. At the proactive level, most employees recognise the value of safety. A4 stated, "*Health and safety issues are seen as a part of the workers and the management*." A4 added, "*In order to prevent risks from occurring, employees have a perception of safety to report any incidents that may pose a danger." B3 observed, "We can find peer pressure towards safety here at a high level*." In the generative level, safety values are embedded in daily life. B3 stated, "*People will genuinely think safety is a priority as a society.*" B2 added, "*Employees and management communicate about innovative ideas for safety improvements*." At this highest level, safety becomes a shared responsibility.

4.1.2 Prioritisation of Safety

Prioritisation of safety is closely tied to the perception of its importance. B1 explained, *"Prioritisation will depend on the perception of safety, but this will be changed due to financial, technical, and knowledge capabilities as well as external requirements (customer, by law, politics, virus, economic condition, government rules, etc.)."* This indicates that even with positive safety perception, external and internal constraints can limit prioritisation. Group A respondents confirmed that health and safety capex is the top priority, but A1 noted, *"If we take a reactive level of safety culture, this health and safety capex will be provided or accepted after a considerable accident occurs."* A2 highlighted the impact of production demands on worker behaviour: *"Think, when the management only wants to increase the output product of the business, they may force workers to do their job quickly."* He added, *"Workers are motivated to do their work because if they increase their job output, they will be rewarded with higher salaries. In that sense, workers may remove their safety guard without thinking of safety to do their work in a fast way."*

Agreeing with A2, A1 stated, *"This type of situation can be identified during a reactive level of safety culture in an apparel organisation."* Group B agreed that at the reactive level, priority shifts based on customer demands, economic conditions, and other external influences. B2 illustrated, *"Most of the large-scale apparel organisations in Sri Lanka provide their products to high-level multinational brands... but due to the economic crisis in Sri Lanka, customers tend to purchase low-level brands... Then, there is an issue with controlling cost due to less paying for products."* Thus, economic instability often results in deprioritising safety. Risk appetite was another theme. A2 explained, *"As a business, we have a board on top of the business; in here we have a risk appetite, which means the degree of risk exposure, or potential adventure impact from an event, that the top of the board of the organisation is willing to accept or take in pursuit of its objectives."* He added, *"So, this health and safety risk appetite should be as low as possible because, as a business, there should not be injury or death to workers."* Capex decisions are based on this appetite and risk assessments. A1 elaborated, *"At this stage, calculations and analysis are done, but efforts to mitigate those risks are given less attention, and we only do the analysis."*

At the proactive level, both groups confirmed that safety becomes a shared value, and systems set during the calculative stage function effectively. Line managers hold accountability. B3 noted, *"According to his position, not only the safety team but also this position is responsible for the OHS issues in the relevant process."* B4 added an example: *"There was a case of an incident regarding a forklift accident, where the reason was driving the forklift while drunk by the operator. In this case, the warning has been given to the forklift operator as well as to the manager of the warehouse."* In the generative level, safety is internalised throughout the organisation. B1 gave an example: *"In this level, the organisation will consider even a needle injury as a high priority risk and think it is a high issue for the organisation."*

4.2 BEHAVIOURAL ASPECTS OF SAFETY CULTURE

4.2.1 Preoccupation with Failure

At the reactive level, Group A noted that workers rarely show preoccupation with failure and are often unable to refuse risky tasks. A1 highlighted, *"Organisation will ask to workers like, we give you salaries; why can't you work? If you stop working, we will reduce it from your salaries."* Group B added that after an accident, actions are taken only to avoid recurrence and to report to management. At the calculative level, both groups agreed that safety committee members are the main contributors to preoccupation with failure, due to their training and safety knowledge. A1 explained, *"Hazard reporting is the major influence in this element. If a small number of people are involved with hazard reporting procedures (mostly safety committee members), this type of level can be seen as a calculative level of safety culture because when it transfers to a proactive or generative level, most of the level of workers or all levels of workers will contribute to being preoccupied with failures."* In the proactive level, compliance with safety systems is standard. B2 shared, *"Think, if you have to operate a machine and there is a proactive mechanism to ensure safety, then we should follow those safety mechanisms thoroughly."* At the generative level, risk is anticipated before occurrence, and innovative reporting and communication are emphasized. A3 suggested, *"By adding advanced new technologies to safety precautions. (e.g., introducing robot hand techniques to dangerous works), we can lead to a generative level."*

4.2.2 Commitment towards safety

Group A agreed that safety commitment must begin at the top. A1 stressed, *"If the management is not actively committed towards safety as a good example, that means there is no expectation for it coming from low-level workers."* A3 added, *"Sometimes people have positive perceptions and a positive priority for safety, but when it comes to commitment, it may be less."* This indicates the importance of visible, proactive commitment by management to influence others. As organisations transition from a reactive to a calculative level, awareness of safety improves. B3 stated, *"When we are at a reactive level, as top-level management, we will more consider profit over safety, so workers will follow the same procedure, but when it transfers to a calculative level, we recognise safety as an investment to reduce costs."* B4 supported this: *"We will develop safety policies and procedures and implement basic safety training at this level."* In the proactive level, both management and workers show strong engagement. B3 noted, *"Most of the people will report hazards to the management, but if the involvement is a smaller number of people or only from the side of safety committee members, it can be identified at a calculative level."* B2 explained, *"When the employees of the organisation innovatively participate for commitment of safety will be identified in generative level of safety culture."* B4 concluded, *"Within this level, workers have the power to identify and address safety hazards and open communication and collaboration on safety."*

4.2.3 Safety Training

Group A discussions revealed that allocating time for safety training is challenging due to productivity demands. A1 noted, *"Most of the time training is conducted while operations are going on in the industry, and if it is necessary for a customer requirement or law, safety training will be conducted."* Group B emphasized the need for structured training, especially for high-risk activities. B2 stated, *"Organisations should provide training programmes to drive a forklift in a safe manner and inform about the safety guards of the machine and how to use it, etc."* Continuous training based on knowledge gaps was also suggested. At the reactive level, training lacks planning. B1 said, *"When it starts with reactive level, training is happening, but not in accordance with a proper plan; here, the training requirement has not been identified properly."* A3 added, *"Employees of the organisation will not ask for training requirements at this level..."* At higher safety levels, however, workers begin to request training. A4 observed, *"Management gives training, but it is not in an effective way (e.g., language problems during the training sessions can happen)."* At the proactive level, structured planning is introduced. B1 explained, *"In this level, we will prepare a competency matrix to identify gaps in safety training requirements, including competency requirements, customer requirements, complaints, legal requirements, etc."* At the generative level, training becomes technology-driven and innovative. A1 suggested, *"As an example, we can introduce VR system-based training sections by adding practical scenarios."* Group B also highlighted that innovative training ideas will be both shared and implemented at this stage.

4.2.4 Personal protective equipment

Group B emphasized that management must ensure PPE is of good quality and comfort. B2 noted, *"Respirators are hard to use for a long period of the day (workers who are involved in chemical, or dust exposure works); here management can give strategy mechanisms such as prepare a shift-based schedule with few workers to do these types of work in a shift manner."* From the employee perspective, Group A discussed responsibility in proper PPE usage. A1 stated, *"If it is in a reactive level, workers will argue not to wear PPEs, and they will give several reasons for not to use it."* At the calculative level, PPE provision becomes driven by compliance. B3 mentioned, *"Organisation will consider customer requirements, by law requirements, by audit, or may be a mandatory requirement to provide PPEs."* However, B2 pointed out limitations: *"In the calculative level, this will differ because in that level, even though PPEs have already been provided for required works, they will not be provided at a proper time. So, workers have no idea how to use those properly, and they are not familiar with them."* Group B also noted that proper training must accompany PPE distribution to ensure familiarity and correct usage. In the generative level, awareness and knowledge of PPE use is widespread. Workers are empowered to refuse unsafe work conditions. B1 provided an example of advanced practices: *"As an example, smart safety watches, smart respirators that measure the concentration of airborne chemicals to ensure that workers are adequately protected, smart safety shoes with sensors that detect when a worker has fallen and notify personnel of the emergency, and a VR training programme for PPE usage.*

4.2.5 Commitment to resilience

At the reactive level, Group A confirmed that organisations lack preparedness for unexpected incidents, and both workers and management are unsure how to respond. B1 emphasised, *"This should come from both sides of workers and management."* It was revealed that both parties must be involved—management in delivering knowledge, and workers in engaging with it. B3 elaborated, *"On the management side, we have the responsibility to provide a proper safety management plan, including a risk assessment plan, a disaster management plan, an emergency preparedness plan, and proper training like fire drills, first aid training, etc., and workers have the responsibility to actively participate in those systems provided by the management."* A1 shared an example: *"In our plant, we gave proper training on how to use and act in first aid, but there was a case on the plant where one worker's finger was cut fully to a machine, and at that time, other surrounding workers (who participated in the first aid training) put that finger to the ice bag without rapping it with a shopping bag or any other suitable water-proofing material. In that sense, we couldn't save his finger. Here, this example revealed that, even though management has provided proper training and workers have also participated, the problem here is whether they actively participated or not."* Group B concluded that at a higher level of safety culture, employees are fully prepared for unforeseen circumstances. *"Every employee in the apparel organisation is ready for unforeseen circumstances and knows what to do in the event of an accident at work."*

4.3 ORGANISATIONAL/SITUATIONAL ASPECTS OF SAFETY CULTURE

4.3.1 Safety Management System

A safety management system (SMS) is essential for maintaining a safe work environment. Group A suggested analysing it based on availability, implementation, and effectiveness. Respondents from both groups stated that, at the reactive level, systems are often unavailable or poorly implemented.

At the calculative level, safety systems like risk assessments and disaster management plans are generally present and implemented. However, effectiveness remains an issue. B2 pointed out, *"High-risk profile-related safety systems such as work permit systems for high levels of risk will be properly run when compared to low-risk profile-related safety systems such as hazard reporting systems."* As organisations reach the proactive level, SMS becomes more reliable and effective. A3 gave an example: *"When faced with emergencies, most employees respond rapidly (i.e., injury, damage to properties). Workers have proper knowledge of unexpected situations and how to react to them in accordance with the safety management system."* At the generative level, safety becomes embedded in practice. Group B stated, *"At this level, everyone within the organisation has a proper understanding and awareness of following each of the safety management systems in an innovative way."*

4.3.2 Incident reporting procedure

Group B emphasized the role of the reporting system in keeping safety practices current. B2 shared an example: *"There was a case in our plant; we had a machine made with white iron material, so it is so easy to slip on the surface. So, during a safety meeting, one worker reported that it is very hard to work on this machine with nylon boots, and they recommend we change the boot material to a non-slippery material."* This illustrated how effective reporting can lead to practical safety improvements. Group A noted that for such systems to work, management must act on reported issues and avoid displaying indifference. At the reactive level, reporting often happens only after accidents, and minor incidents may go unreported. A1 described, *"In our organisation, we have a system where if it is an incident where there is no need to go with medical treatment, it will not be reported."* He added, *"If it is an emergency case, it should be reported because they have to go with medical facilities provided by the organisation."* In the calculative level, reporting becomes data-driven but lacks effective follow-up. A1 said, *"At this level, a large amount of data from incidents (e.g., the number of fire incidents, the number of trimmer cuttings, the number of needle injuries, etc.) will be reported to the management, but preventive or action progress is not taken effectively."* At the proactive level, the reporting system is used effectively both before and after incidents. A2 explained that proactive measures help strengthen the system and ensure it supports preventive action. In the generative level, reporting includes self-errors and fosters innovation. A1 gave an example: *"If there is any incident due to my fault, I will report it, like I was going to fall from the staircase because I was on the phone at that time, I didn't hang the handrail, and so on."* Group B concluded that innovative and voluntary reporting is a hallmark of this mature safety culture.

4.3.3 Fair reward system

Group A highlighted the importance of appreciating and motivating workers through rewards as part of the safety culture. A1 stated, *"When it comes to the reactive level of apparel organisation, limited or inconsistent recognition or rewards for safety performance can be identified."* The key difference between the calculative and proactive levels lies in fairness and consistency of rewards. Group B noted that at the calculative level, *"Rewards are only provided for top-level management or with connections,"* while at the proactive level, *"fair and consistent rewards for safety excellence and recognition programmes for proactive safety achievements can be identified."* (B2) At the generative level, safety performance becomes integrated into overall performance assessments. Group A discussed appreciation for safety initiatives, *"Acknowledgment for innovative safety adjustments funding for safety leadership development and training."*

4.3.4 Safety policies

Group B highlighted that the quality and strength of safety policies are critical. B1 noted, *"Safety policies can be identified at a reactive level but have an issue with the quality and the strong ability of the policy. Managerial-level people are the ones who are aware of safety policies."* At the calculative level, Group A stated that policies are developed based on plant, business, and risk profiles but are poorly implemented and communicated.At the proactive level, Group B explained that strong, high-quality safety policies are well established and effectively communicated. B3 added, *"Safety policies are continuously displayed in common areas, such as the cafeteria of the organisation."* Most employees understand the policies and their requirements at this stage. At the generative level, Group A remarked, *"Policies will compare with the global level. All levels of employees have knowledge and awareness of safety policies, and they are well communicated."* B2 further explained that employees *"innovatively communicate about safety policies at both the management and worker levels."*

4.3.5 Safety meeting, communication and feedback sharing

Group B suggested categorising this element into safety meetings, safety communication, and feedback sharing. Both groups revealed that at the reactive level, safety meetings occur only after significant accidents. A1 noted, *"In this level, feedback is often ignored or overlooked, and reactive responses to incidents occur without addressing root causes or systemic issues."* At the calculative level, the focus shifts to top-down communication. A4 explained, *"As top-level management, we conduct safety meetings on a scheduled time scale (once every month). Here we discuss what safety issues happened, how we prevented them, hazard reporting, how many safety concerns we raised during the last month, and so on."* At the proactive level, communication translates into action. Management enables workers at all levels to participate actively in safety meetings. At the generative level, B1 described, *"A transparent and inclusive communication culture can be identified."* Group B added that innovative feedback is encouraged, such as B2's example: *"This part of this training session is great, but this part needs to be improved; it doesn't match with our work; it is good if you can show it in a practical way, and so on."*

4.3.6 Safety Control System

Group A noted that safety control depends on financial and technical stability and external uncontrollable factors. B1 gave a practical example: *"Due to import restrictions for international product purchasing, the price of PPE has increased, so management has to reduce the supply of PPE to workers due to the unstable financial strength."* B1 further explained, *"So, this type of organisation can be on a reactive level; if they sustain a good financial and technical level, like a generative level, that organisation may not have to reduce PPE supply to workers."* At the calculative level, Group A described safety control as involving *"risk assessment, periodic safety audits, compliance monitoring, incident investigation, cost estimation on safety, and corrective actions based on identified hazards."* A1 added, *"Under the legal framework, standard, or customer requirement, organisations have to control the safety protocols properly."* At the proactive level, Group B highlighted that organisations have *"a proper plan, technical capacity, resources, skills, and influence at the international level."* Advanced control features include hazard identification, near-miss reporting, safety training, performance tracking, continuous improvement, and employee participation. At the generative level, A2 emphasized, *"control systems will incorporate safety into every aspect of operations, making use of cutting-edge technologies (like IoT and AI) for proactive risk management, real-time monitoring, predictive analytics, and continuous learning from incidents."* B2 noted that organisations maintain safety controls even when not profitable at this level.

4.3.7 Resource (human, financial, technical) allocation for safety

During Group A's discussion, *"the resources (human, financial, and technical) allocation for safety"* was added as a new organisational element. A1, with 20 years' OHS experience, stated, *"At the reactive level of safety culture, resources are provided for most critical current risks (e.g., COVID 19). When the risk is decreased, resource allocation will also decrease."* This view was supported by A2, A3, and A4. At the calculative level, Group A noted that resource allocation increases based on risk calculation and priority. A3 emphasized, *"Based on the calculation of the risk level and priority of the risk, resources will be provided, and here they will consider customer requirements by law as well."* In Group B, B3 explained that at the proactive level, *"a large financial outlay for advanced safety equipment and technologies will be provided, a large investment in human resources for safety training and education will be made, and the use of technical resources for preventive safety measures like risk assessments, data analytics, and continuous improvement projects will also be identified."* At the generative or sustainable level, Group B highlighted *"significant funding allotted for the development of innovative safety technologies and research can be identified, and heavy reliance on technological resources for creative safety solutions, real-time monitoring, and predictive analytics will also be there."*

4.4 CONCEPTUALISING A RUBRIC FOR UNDERSTANDING THE MATURITY OF SAFETY CULTURE

Based on the findings of the data, the conceptualised rubric for understanding the safety culture maturity level of large-scale apparel manufacturing organisations was refined. The refined rubric is displayed in Table 4 (refer to annex 2).

5. Conclusion

This study comprehensively explored the concept of safety culture maturity within large-scale apparel manufacturing organisations in Sri Lanka. This study was based on Cooper's reciprocal safety culture model (2000) and Hudson's five-level safety culture maturity model (2007). A qualitative research approach was used with an expert interview survey. Two focus

group interviews were conducted with the OHS experts in the apparel industry. The collected data were analysed through content analysis. Finally, the findings were presented by developing a rubric for understanding the safety culture maturity. This rubric provides an initial framework that will be useful for understanding safety culture maturity and guiding future research in this section. Furthermore, the findings of this study provides actionable insights for managers and safety practitioners in large-scale apparel manufacturing organisations. The rubric can help managers assess their current safety culture maturity, identify areas requiring improvement, and prioritize interventions to enhance workplace safety. Safety practitioners can use the rubric as a diagnostic tool to design targeted training, monitoring, and safety improvement programs.

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Annexure I

Table 3, Conceptualized rubric for understanding the maturity of safety culture

	Maturity Levels of safety culture					
Element of safety culture	**References**	**Pathological Level 1**	**Reactive Level 2**	**Calculative Level 3**	**Proactive Level 4**	**Generative Level 5**
		Characteristics of safety culture elements under each level				
Person/ Phycological		**Pathological**	**Reactive**	**Calculative**	**Proactive**	**Generative**
• **Perception of the importance of safety (Values or beliefs)**	Majid (2010); Piers et al. (2009); Priyadarshani et al. (2013); Schein (1990); Sukadarin et al. (2012)	• People fail to comprehend how important safety issues are. • Workers have little faith in and concern for their safety.	• People start to value safety concerns only after an unplanned accident occurs. • When an accident happens, workers believe in safety and show concern for it.	• Only a small portion of workers respect, acknowledge, and feel personally responsible for safety issues.	• Most of the workers respect and acknowledge the significance of safety concerns, and they also care about themselves.	• Every individual within the organisation holds positive values, beliefs, and perspectives regarding the significance of being aware of safety.
• **Prioritization of safety (Values or beliefs)**	Majid (2010); Piers et al. (2009); Priyadarshani et al. (2013); Schein (1990); Sukadarin et al. (2012)	• Profit and performance are the most priorities. • Putting more money and effort into increasing profit than increasing safety.	• Only after an unanticipated accident occurs, funds will be allocated for safety improvements.	• Prioritise safety enhancements only in areas that have been determined to be at high risk.	• Financial and human resources allocated to enhancing safety.	• Priority of safety over profit and performance. Investment of money and effort to improve safety.
Behavioural		**Pathological**	**Reactive**	**Calculative**	**Proactive**	**Generative**
• **Preoccupation with failure**	LaPorte & Consolini (1991); Rochlin (1996); Trinh & Feng (2022)	• Organisations are not aware that unanticipated dangerous events, such as unnoticed dangerous situations and unintentionally dangerous behaviours, can happen at any time or location.	• Employees are concerned about the unexpected accident only when the accidents occurred.	• Although safety risks on the job site are identified and managed, only a small percentage of employees are aware of them.	• Even in cases where safety risks have been identified and mitigated, most employees remain aware of them.	• The implementation of health and safety protocols on the premises is not met with a feeling of complacency.
• **Commitment of Management and Employees**	Jaselskis et al. (1996); Majid, (2010); Sawacha et al. (1999); Trinh & Feng, (2022);	• The management, supervisors and employees give support and attention in safety	• The management and employees pay attention only when hazardous situations occur.	• The management provides safety systems, and a small number of employees	• In addition to giving workers adequate assistance and attention while they are at work,	• To eliminate or minimise the risks of hazards, everyone in the organisation is

	Vinodkumar & Bhasi (2010)	because of the regulatory requirements. No self-support.		attempt to resolve safety issues.	management and staff actively look for health and safety concerns.	aware of their tasks and responsibilities towards safety.
• **Safety training**	Choudhry & Fang, (2008); Davies & Tomasin (1996); Jannadi (1996); Parker et al. (2006); Trinh & Feng (2022);	• It is believed that training is an evil but necessary. Participate in training when required by law. • There is not sufficient workplace safety training offered by the organisation.	• Only when significant dangerous incidents take place, the organisation offer a particular safety training program for employee. • Money is made available for specialised training following an accident.	• There are competency matrices and numerous standard training courses offered. • Testing is done on accurate course knowledge.	• Leadership recognises the value of tried-and-true abilities in the workplace. • The workforce takes great pride in showcasing their abilities during on-the-job evaluations. • Training needs start to be identified by worker.	• Every person in the company receives regular safety training while at work. • Educated employees and managers in the establishment of safe practices.
• **Personal protection program conducting within the organisation.**	Glendon & Stanton (2000); Trinh & Feng (2022)	• Personal protection equipment (PPE) is not provided by the organisation for employees to use at work.	• PPE is offered by the organisation in response to significant dangerous incidents.	• The organisation provides PPE only when required and those required people will concern.	• The organisation offers personal protective equipment that complies with safety protocols.	• The organisation provides and maintains PPE properly and inspects them for their concern and people wear it because of their own awareness.
• **Commitment to Resilience**	Sutcliffe (2011); Trinh & Feng (2022)	• The company is not ready for unanticipated occurrences. • When faced with an emergency (i.e., injury, property damage, event), nobody knows what to do.	• The organisation only realises how important it is to be ready for the unexpected when unanticipated dangerous circumstances arise.	• Few workers respond promptly to emergencies (i.e., incidents, property damage, injuries).	• When faced with emergencies, most employees respond rapidly (i.e., injury, damage to properties, incident).	• Every employee on the organisation place is ready for unforeseen circumstances and knows what to do in the event of an accident at work.
Situational/ Organisational		**Pathological**	**Reactive**	**Calculative**	**Proactive**	**Generative**
• **Safety management system**	Ho et al. (2000); Priyadarshani et al. (2013); Trinh & Feng (2022)	• There are no safety plans or procedures offered by the organisation and failure to comply with safety regulations,	• Hazardous situations that recur are the subject of the safety plan and procedures, and safety regulations and laws are created when dangerous circumstances occur.	• The safety plan/procedures are written focusing only on observed hazards and safety standards and legislation made focusing only on observed hazards.	• All workplace areas have written safety plans, procedures, and standards, but they are not routinely evaluated.	• Every section of the workplace has safety plans and procedures, which are regularly reviewed for increased efficacy.

		norms, and standards.				
• **Incident reporting procedures**	Parker et al. (2006); Piers et al. (2009); Trinh & Feng (2022)	• A lot of occurrences go unreported. • The organisation lacks an appropriate process for reporting incidents.	• An informal reporting system exists, and the investigation solely investigates the immediate cause. • There is not much systematic follow-up, and past incidents are not considered.	• Many processes generate a large amount of data and action items, yet chances to address the true problems are frequently lost.	• To share information and lessons learned, reports are given to the entire organisation. • Even if they had any part in any errors that happened, the staff members communicate or report them when they happen.	• Everyone working there has the freedom to report to the organisation and share errors with other employees to prevent recurrence of the same failures. • Systematic follow-up is carried out to ensure changes are made and sustained.
• **Fair reward**	Bisbey et al. (2021); Parker et al. (2006)	• There are no expectations or rewards for safety performance.	• Inadequate safety performance is penalised. • The knowledge that good behaviours can be rewarded is yet a way off. • Bonuses for managers based on profit-sharing performance.	• Good safety performance is paid with some incident reporting and there are safety competitions and quizzes. • Some verbally reporting is paid to good safety performance.	• Promotion reviews take good performance into account and offer certain rewards. • Evaluation is not outcome-based, but process-based.	• Recognition is highly valued in and of itself. • Achieving good safety performance is inherently inspiring.
• **Safety Policies**	Cheng et al. (2015); Glendon & Stanton (2000); Trinh & Feng (2022)	• The organisation does not value health and safety regulations at the same level as other goals. • No guidelines exist to attain safety performance.	• The organisation does not realise how important health and safety regulations are until after dangerous incidents occur. • After a dangerous incident, safety regulations are created.	• Workplace health and safety performance goals are established by the organisation.	• Supervisors and site management are the only ones with access to the safety policy.	• All employees have access to the safety policy, which reflects the management's commitment to worker safety as well as its guiding principles and goals.
• **Safety meeting, communication, and feedback sharing**	Molenaar et al. (2009); Piers et al. (2009); Tam et al. (2004); Trinh & Feng (2022)	• There are no workplace safety meetings hosted by the organisation. • Nobody discusses safety concerns.	• Safety meetings are only scheduled by the organisation in response to significant dangerous occurrences. • Only discuss safety concerns in relation	• Only observed hazards are the subject of official safety meetings that are arranged by the organisation. • Share safety information only with those areas that have	• For the most part, the organisation holds formal safety meetings to discuss safety-related matters.	• For all matters pertaining to safety, the organisation holds official safety meetings. • Sharing safety-related information

			to previous incidents that occurred within the organisation.	been found to be hazardous.		with all staff members.
• **Control systems.**	Ho et al. (2000); Sawacha et al. (1999); Trinh & Feng (2022)	• To meet health and safety goals of identified hazards, the organisation does not supply the necessary financial, technical, or human resources.	• Financial, technical, and human resources pertaining to observed hazards are provided by the organisation only after hazardous events take place.	• The organisation only provides financial, technical, and human resources related to observed hazards and there are safety control systems in the organisation.	• The organisation provides financial, technical, and human resources to achieve health and safety targets related to both observed hazards and potential hazards.	• If there are any modifications to the working environment, the necessary preventive measures are given right away (i.e., new hazards identified, hazardous events occurred).

Annexure II

Table 4, Final rubric for understanding the safety culture maturity level in large scale apparel manufacturing organizations in Sri Lanka

Maturity Development of Safety Culture in Apparel Industry Sri Lanka				
Element of safety culture	**Reactive Level**	**Calculative Level**	**Proactive Level**	**Generative Level**
	Characteristics of safety culture elements under each level			
Phycological/Safety climate	**Reactive**	**Calculative**	**Proactive**	**Generative**
Perception of the importance of safety (Values or beliefs)	• Employees have opportunities to transfer to another industry, so workers are not remaining for a long period within the industry. The workers and the management in the apparel industry pay attention to health and safety issues after an accident occurs or after a customer or worker complains. The workers will follow safety rules only with supervision. (e.g., if a finger is injured from a needle because of the wrong position of sewing, then after that incident, the worker will be concerned about that type of risk.) Peer pressure is high in an unsafe working environment. A low level of people will take a risk without thinking about its negative impacts (overconfidence in the work).	• In these types of plants in the apparel industry, most workers are less transitional, do not have many job alternatives, and stay for a long period of time in the industry. So, there will be a small number of people who have been built as a group with years of experience in the importance of health and safety. So, these workers feel personally responsible for safety issues. They report incidents, correct their mistakes regarding safety issues, or at least give indication or inform for repair by knowing relevant personnel. Further, considering the customer requirements, international influence, or by law, safety protocols have been provided.	• Health and safety issues are seen as a part of workers and management, and most of the employees acknowledge the significance of safety concerns, and they also care about themselves. People have a positive perception of actively patriciate to follow the safety system effectively in an apparel organisation. Peer pressure to adapt to a positive safety culture is at a high level.	• The living style of apparel workers has changed with safety concerns. Workers find solutions to safety issues together with the management. Everyone has positive values, beliefs, and perspectives regarding the significance of safety. Employees and management communicate about innovative ideas for safety improvements. Peer pressure is high at this level to create a positive safety culture. Employees and management communicate about innovative ideas for safety improvements. People genuinely think safety is a priority in our society.
Prioritisation of safety (Values or beliefs)	• Health and safety (H&S) capex is provided by the management after an accident, injury, or death happens. Give more priority to increasing business profit because demand for low-level brands of	• Management will provide H&S capital expenditure and human resources to enhance safety, but there is a problem with giving priority to effectiveness and continuous running. Health and	• Management will provide H&S capital expenditure and human resources to enhance safety and give priority to running the safety system in an in an effective way. Management has the priority for	• Priority for safety will be provided the same as for profit. Management will consider even a needle injury as a high priority; it is a high issue for the organisation, and they have a feeling that they must eliminate this risk. Workers are innovatively involved in

	apparel has increased compared to high-level brands. So, they have issues with cost control. Workers are self-motivated to increase product output to increase their salaries. So, until the accident happens, they will not give priority to safety.	safety experts in the industry calculate levels of risk, severity, probability, and risk rates, and based on those findings and a risk-based approach with a risk appetite, H&S Capex will be approved. A small number of people will give priority to safety. This may be management or a safety committee.	safety, and most of the workers of the organisation will give priority to enhancing safety by themselves. Not only safety management, but also other managerial-level staff will also give priority to safety (e.g., the line manager will be responsible for the accidents that occurred among his low-level workers).	communicating with management for safety concerns, and workers will notice management about the areas that should be prioritised and improved.
Behavioural	**Reactive**	**Calculative**	**Proactive**	**Generative**
Preoccupation with failure	• It is rare to identify preoccupation with failure among workers. Workers have no right to stop or refuse the work when there is a preidentified risk. After an accident happens, they will consider not repeating it again and will report to the management about the hazards after any accident happens.	• Workers communicate about risks and hazards with management, and only a small percentage of employees are aware of them. Most safety committee members in the apparel industry are involved with safety concerns. Hazard reporting is happening. Check how many injuries happened previously and the reasons for those; what are the new accidents compared to the previous month; and so on. (trimmer cut injuries, needle injuries, warehouse injuries, electrical shocks, fire incidents, accidents with boiler operation, etc.).	• Most of the employees are aware of pre-identifying safety issues. Workers have self-awareness about risks; they inform each other of them, not because of safety rules. Management has mechanisms to inform the workers about risks, e.g., lessons learned, alerts sent to smart phones, videos shown, and presentations displayed regarding safety issues in common areas like canteens.	• It is very close to zero accidents. The worker's preoccupation with safety is high, as is their potential capacity for risk prediction and seeing any potential risk before it happens (e.g., when a worker proceeds with sewing, he or she will consider "his finger can be injured from this machine before he is going with the work"). Workers have the right to refuse or stop the work if it feels dangerous to them. Safety will be compared to the global level; there is competition to reach the level of safety among the industries; organisations will show their monthly or quarterly reviews of their performance towards safety to the staff. So, workers have preconceived notions of safety in their blood. Introduce advanced new technologies for safety precautions. (e.g., introduce robot hand techniques to dangerous works). All levels of workers are innovatively involved to eliminate risk.
Commitment towards safety				
✓ **Employee Side**	• Workers prioritise production over safety. Limited reporting of safety incidents. Fear of retaliation for reporting.	• Workers become more aware of safety procedures. Increased reporting of incidents but may still be hesitant.	• Workers actively participate in safety programs. Report incidents without fear of retaliation. Look for ways to improve safety procedures.	• Workers are safety champions. Proactively identify and report potential hazards. Take ownership of their personal safety and that of their colleagues.

✓ **Management Side**	• Focus on compliance to avoid legal repercussions. Safety is seen as an expense. Limited safety training.	• Recognises safety as an investment to reduce costs (e.g., worker injuries, insurance). Develops safety policies and procedures. Implements basic safety training.	• A Strong leadership commitment to safety can be identified. Allocate resources for safety initiatives. Encourages open communication about safety concerns within the organisation. Invests in safety training and equipment.	• Safety is a core value of the organization. Management will innovatively involve safety improvements. Continuous improvement in safety culture. Empowers workers to identify and address safety hazards. Open communication and collaboration on safety (e.g., conduct safety papers, conduct practical safety competitions, and the workers who get high marks will be gifted by the organisation)
Safety training	• In this level, time spent on safety training is considered a part of profit loss (e.g., every loss of a minute will cost a dollar). Give basic training while continuing the process. Here, the training requirement is not properly identified. Safety training will be provided if it is necessary for safety reasons by law or customers. After an accident, money is made available for a specific training programme.	• The top-level management is aware of the importance of training skills for the work. At this level, a small percentage of workers start to value safety training. Management gives training, but it is not effective. Prepare tools to identify the requirements of safety training. (e.g., prepare a competency matrix; by using competencies, management will identify the requirements of safety training and then prepare a rating matrix.) But only training gaps will be identified, not a proper training programme for those identified gaps.	• Safety training programmes are followed in an effective way. By using competencies, management will identify the requirements of safety training and then conduct the required training programme. Consider scientific requirements to identify gaps in safety training requirements, including competency requirements, customer requirements, complaints, and legal requirements.	• Workers will demand the safety training; they will ask for their required level of safety training. Innovative training ideas are communicated with the management and workers. Conduct an advanced technological training and practical programme. (Use the VR training programme.).
Personal protection Equipment (PPE) programme and usage.	• After an unexpected accident happens, management will be concerned with providing PPE for relevant work (e.g., after a person falls from a roof, they will provide safety guards or safety harnesses). Practically not analyse its comfortability and applicability when providing PPE to workers.	• Mainly focus on high-risk areas (engineering workers, warehouse workers, sharp cutting workers), so the required PPE will provide for those workers. PPE may be a mandatory requirement for providing based on required law and customer requirements. In that situation, if management does not provide PPE, it can be a violation of the safety requirements of workers. PPE is provided, but not at the proper time; workers have no guidance on using it, and they are not familiar with it before going to work.	• The organisation will provide safety PPE for different perspectives of workers, such as the safety team, apparel cutting team, warehouse staff, engineering workers, chemical-related workers, etc. PPE is provided at a proper time and gives proper training and guidance on how to use it and practically check the quality and comfortability. Give time to familiarise yourself with the PPE before going to work.	• Every level of worker is aware of and has knowledge of PPE usage. They have knowledge about risk. Workers have the right to stop work if the required PPE is not provided. Advance PPE will be provided other than traditional PPE (e.g., smart safety watches, smart respirators that measure the concentration of airborne chemicals to ensure that workers are adequately protected, and smart safety shoes with sensors that detect when a worker has fallen and notify personnel of the emergency). Provide a VR training programme for PPE usage.

Commitment to Resilience	• The management realises how important it is to be ready for unexpected risks when accidents happen. (e.g., after the very first experience of a fire incident, they will consider implementing a fire safety system.). Workers have no proper training or knowledge on how to react to unexpected accidents.	• Management provides the required safety and resilience systems. When there is an emergency, a few workers will inform others about the risk, and the people who have knowledge or experience of the resilience of the emergency will attempt to restrict it, while others will only look.	• When faced with emergencies, most employees respond rapidly (i.e., injury, damage to properties). Workers have proper knowledge of unexpected situations and how to react to them.	• Every employee in the organisation of the apparel place is ready for unforeseen circumstances and knows what to do in the event of an accident at work. Management and workers will share innovative ideas on the resilience of safety.
Organisational/ Situational	**Reactive**	**Calculative**	**Proactive**	**Generative**
Safety management system				
✓ **Availability of the system**	• Safety systems are less available in the organisation.	• Systems are available in the organisation (risk assessment, work permit, hazard reporting, etc.)	• Systems are available in the organisation (risk assessment, work permit, hazard reporting, etc.)	• All the required safety systems are available.
✓ **Implementing the system**	• Implementing required systems after accidents occur.	• Most of the systems have been implemented.	• Every required safety system has been implemented.	• Those are properly implemented.
✓ **Effectiveness of the system.**	• Effectiveness is low.	• High-risk profile-related safety systems such as work permit systems for high levels of risk will properly run when compared to low-risk profile-related safety systems such as hazard reporting systems.	• Most of the workers have knowledge and awareness of the following safety systems.	• Everyone within the organisation has a proper understanding and awareness of following each of the safety management systems.
Incident reporting procedure.				
✓ **Availability of the system**	• There will be a report system that can be processed by force after an accident happens.	• Hazards reporting systems have been implemented within the organisation (hazard reporting boxes, reporting WhatsApp group, online portal).	• Hazards reporting systems have been implemented within the organisation (hazard reporting boxes, reporting WhatsApp group, online portal). •	• All the required Hazards reporting systems has implemented within the organisation with new technologies. •
✓ **Effectiveness of the procedure**	• If a near miss or injury happens, it will be reported. (e.g., if there is no need to go with medical treatment, it will not be reported, but if it is needed to go with medical treatment, workers have to report to the medical centre of the organisation.).	• A large number of safety issues will be addressed, but only the analysis part will happen. Not go with preventive actions.	• Large number of safety issues will be informed not only risk, but also unsafe behaviours and act will be informed and most of the preventive actions will be taken.	• Workers have self-awareness when reporting safety issues and unsafe behaviours. They not only report it with the management but also communicate with other workers, and self-error incident reporting will happen (e.g., a worker has reported that “when I’m climbing on the staircase, I was going to fall because I did not hang the handrail”). Workers are innovatively involved with hazard reporting.

Fair reward and Appreciation	• In this stage, limited or inconsistent recognition or rewards for safety performance, primarily reactive responses focused on individual blame for incidents.	• Moderate rewards for compliance. Have a reward system for safety performance, but not in a fair way (e.g., rewards are only provided for top-level management or those with connections). Reward based on performance for managers who have a strong safety record.	• Team-based rewards for identifying and mitigating safety hazards. Emphasis on near-miss and safety improvement reporting incentives, fair and consistent rewards for safety excellence, and recognition programmes for proactive safety achievements.	• Safety performance is incorporated into assessments of overall performance. Appreciation for initiatives promoting a positive safety culture. Acknowledgment for innovative safety adjustments funding for safety leadership development and training.
Safety Policies	• Safety policies can be identified, but there is an issue with the quality and strong ability of the policies. Managerial-level people are the ones who are aware of safety policies.	• Safety policies are provided based on plant-specific, business-specific, and risk-specific profiles but are not effectively implemented and followed. Lack of communication about safety policies. Further, they will consider customer requirements and, by law, standards when it comes to safety policies. A small number of workers (probably safety committee members) will be interested; others will not.	• Quality and strong safety policies are established in advanced. Effectiveness and knowledge of safety policies will be well communicated to workers at the senior level of management (e.g., safety policies are continuously displayed in common areas of the organisation). Most of the people in the organisation have a proper understanding of the policies and their requirements.	• Safet policies are well established within the organisation. Compare with the global level. All the level of employees has the knowledge and awareness on safety policies, and they are well communicated within the organisation for all levels.
Resource (human, financial, technical) allocation for safety.	• Resources are provided for most critical current risk. (e.g. Covid 19). When the risk is decreased, resource allocation will be also deceased.	• Here increases allocation compared to reactive level. Based on calculation of risk level, priority of the risk, resources will be provided, here they will consider customer requirements, by law as well.	• More resources being allocated on all fronts. Large financial outlay for advanced safety equipment and technologies, large investment in human resources for thorough safety training and education, and use of technical resources for preventive safety measures like risk assessments, data analytics, and continuous improvement projects.	• Optimum distribution of resources to ensure security. A thoughtful allocation of human resources towards continuous education, growth, and promotion of a safety-oriented culture. Significant funding allotted for the development of innovative safety technologies and research. Heavy reliance on technological resources for creative safety solutions, real-time monitoring, and predictive analytics. Resource allocation for development of innovative safety improvements.
Communication of Safety				
✓ **Safety Meeting**	• A safety meeting will be conducted and discussed after a considerable accident happens. The safety meeting may be required by law.	• Safety meetings will be conducted on a scheduled time scale (once every month). In those meetings, they will discuss how many hazards have been reported, what the safety issues are, what the what the safety concerns are, and what the customer requirements are, but assessment and communicating procedures	• Safety meetings will be conducted in an advanced manner and in an effective way. After the meeting, actions will be taken most of the time in an effective way. Frequent safety meetings focused on proactive measures, continuous improvement discussions, and learning from near misses.	• Dynamic safety meetings integrate safety into all aspects of operations, focus on innovation and leading practices, proactive sharing of best practices and lessons learned, robust communication channels for safety information exchange, and active engagement and participation in safety discussions at all levels.

		have only happened, not actions for prevention.		
✓ **Communication**	• Top-down communication is limited. Information was shared only in response to past incidents. Top-down communication emphasising rules and regulations, lack of open channels for safety concerns or suggestions.	• Increased communication. Two-way communication (top level to bottom and bottom to top level) can be identified, and an accident reporting system is there.	• Open and transparent communication at all levels; proactive sharing of safety information. Management will communicate, including what the safety system is, what the policies are, what we should do to enhance safety, and so on. Management will allow workers to communicate the safety issues during those meetings. All levels of workers (production, maintenance, warehouse, chemical, etc.) actively participate and share their opinions.	• Transparent and inclusive communication cultures is identified. Emphasis on sharing best practices and safety innovations, proactive solicitation of feedback and suggestions from workers, and continuous improvement.
✓ **Feedback Sharing**	• Feedback is often ignored or overlooked, and reactive responses to incidents occur without addressing root causes or systemic issues.	• Feedback is acknowledged but may not always lead to tangible improvements; some learn from incidents but are still focused on compliance rather than systemic changes.	• Feedback is actively sought and valued, incorporated into safety initiatives and improvements, with an emphasis on learning culture and continuous improvement based on feedback and insights from incidents (e.g., management will give feedback such as how much customers we attracted due to enhanced safety performance, how much the apparel organisation rated from external feedback, etc.).	• Innovative ideas on safety will be provided. (e.g., employees give feedback for training sessions in an innovative way, such as "This part of this training session is great, but this part needs to be improved; it doesn't match with our work; it is good if you can show it in a in a practical way, and so on.)
Safety Control Systems	• Consider financial and technical capabilities. If the top management force is to do safety, then workers have to do it. Controllability of safety always changes due to external factors (e.g., due to import restrictions for international product purchasing, the price of PPE has increased). So, management has to reduce the supply of PPE to workers due to the unstable financial strength.	• Under the legal framework, standard, or customer requirement, organisations have to control the safety protocols properly. "As long as the reasonably practical (ALARP) concept has been implemented, here, organisations have risk assessment, periodic safety audits, compliance monitoring, incident investigation, cost estimation on safety, and corrective actions based on identified hazards.	• In this level, the organization is stable with capabilities (a proper plan, capacity, resources, skills, and influence at the international level). An advanced control system with proactive features like hazard identification, reporting of near-misses, training on safety, tracking of safety performance metrics, efforts for continuous improvement, and employee participation in safety programmes can be identified.	• Organisations will control their safety systems even though they are not at a profitable level. They consider safety to be the most important thing to concern (e.g., if they disturb that system running, that will have a huge, long-term effect on the organisation). All-inclusive control system that incorporates safety into every aspect of operations, making use of cutting-edge technologies (like IoT and AI) for proactive risk management, real-time monitoring, predictive analytics, and continuous learning from incidents, as well as encouraging an innovative and shared responsibility for safety culture.