



Factors inhibiting safety practises in warehouse operations: A case of Sonwabo logistics

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Abstract

The most prevalent challenge in warehouse operations is the high number of safety incidents and injuries. Among other factors, warehouse employees are constantly subjected to risk factors pertaining to safety practises whilst performing their daily functions. The goal, therefore, should be to identify the gap between current safety systems and the acceptable safety standards to identify ways to keep warehouse incidents to a bare minimum. In this way, organisations can carefully direct their resources and focus on the employee engagement with the current systems and operational procedures. The main purpose of this study is to determine the factors that inhabit safety practice in warehouse operations at Sonwabo logistics. The objectives of the study were to identify safety practises in retail warehousing operations; to identify factors inhibiting the effective workplace safety practises in warehouse operations; to examine whether the safety legislative section, standard operating procedures, and housekeeping strategy influence warehouse safety levels and to determine the extent to which warehouse mechanisation and automation influence employee safety for materials handling and ergonomics.

The study used an exploratory case study research design using non-probability sampling that utilises both convenience and purposive sampling. Using the purposive sampling method, fourteen employees with expert knowledge of the subject matter were selected as sample size. Primary data was collected using semi-structured interviews with open-ended questions which were distributed electronically. By employing interview questions, interviewees could establish critical factors that affect effective workplace safety operational standards. A total of 14 responses were received and deemed usable for the analysis. Personnel from the inbound, outbound logistics, risk management, operations control, and human resources departments were chosen for the sample. Using the Nvivo themes and patterns. The study found that safety practises are usually not followed by employees, and they only exist on paper. Additionally, there was evidence of a misalignment between health and safety requirements and daily operational activities. Based on the research findings, negligence, insufficient training, inadequate supply of Personal Protective Equipment and signage are the prevailing factors that hinder the effectiveness of workplace safety practises in retail warehouse operations. On average, the respondents agreed with the OHSA that it is the responsibility of the employer to enforce the legislative requirements while it is the employee's responsibility to comply with the health and safety standards that are put in place. Furthermore, the results revealed that even though Distribution Centres understand the importance of safety practises, finances are being channelled to warehouse mechanisation and automation while safety practises are being overlooked. The study concluded that the factors affecting workplace safety are still prevalent and need to be reinforced further to maintain zero tolerance for workplace injuries.

Key words: Distribution Centre, OHSA, Warehouse

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Acronyms

OHSA – Occupational Health and Safety Act

DC – Distribution Centre

WMS – Warehouse Management System

SOP – Standard Operating Procedures

PPE – Personal Protective Equipment

UKZN – University of KwaZulu-Natal

POS – Point Of Sale

ERP – Enterprise Resource Planning

AI – Artificial Intelligence

IoT – Internet of Things

UID – Unique Identifier

ROI – Return On Investment

SHE – Safety, Health and Environment

MIG – Management, Information Technology and Governance

NOSA – National Occupational Safety Association

IOD – Injury On Duty

CCTV – Closed Circuit Television

IT – Information Technology

CHAPTER ONE

INTRODUCTION TO THE STUDY

1.1 Introduction

Warehousing is critical in balancing supply and demand in supply chain sectors. The warehouse function is no longer limited to storage but now adds value through other cross functions such as assembly, packaging, and repairs. Research shows that effective application and implementation of the standard operating procedures streamlined with effective and efficient material handling systems can improve warehouse operations whilst bringing accidents to a bare minimum (De Koster, Johnson and Roy, 2017:6327-6330). The study focuses on warehouse operations and the aim is to find factors that inhibit safety in warehouse operations such as trips, slips, falls and negligence amongst others. The background of the study focuses on Section 7 of the Occupational Health and Safety Act 85 of 1993 (OHS Act), which states that “the employer must prepare a written Health and Safety policy concerning the protection of employees at work, including a description of organisation and the arrangements for carrying out and reviewing that policy”. The literature looks at the Standard Operating Procedures (SOPs) as well as the Warehouse Management Systems (WMS) that is utilised in products and materials handling. The recurrent accidents that impair the efficiency of workers are because safety is not completely integrated in the strategic plan or organisations. This study, therefore, aims to encourage a thorough application of safety policies in the workplace; thus, this study uses a qualitative analysis that incorporates principles of case coding.

1.2 Background of the study

Section 7 of the Occupational Health and Safety Act 85 of 1993 requires employers to establish a written Health and Safety policy for their workers, which includes a description of the organisation and procedures for implementing and evaluating the policy. According to this legislation, employers must safeguard workers from occupational injuries, and employees must care for their own health and safety. A warehouse is a commercial facility used for storage of goods for medium to long term while a Distribution Centre is a facility that offers other value adding activities such as product mixing, order fulfilment, labelling and packaging as well as cross docking. The distinction between the two is that retail and warehouse orders are shipped from the Distribution

Centre (Young, 2019:27). However, these are similar in that both store goods prior to their sale or before reaching the final customer. Many of the activities performed in a warehouse are also performed in a Distribution Centre; nevertheless, the study is focusing on a commercial facility that is performing the functions of storing, sorting, handling, and packaging of goods. For this reason, these terms will be used interchangeably throughout this research.

The safety of employees in a warehouse has an impact on the productivity of the supply chain operations (Mokhasi, 2017:201). Although studies have been performed and safety culture models created, little research has been done to verify organisational practises and values that directly affect warehouse and supply chain workers. A hummus factory lost a worker owing to a lack of training on the lockout process, which shuts down the machinery before cleaning the pant. According to the OSHA, poor safety standards may increase the risk of fatal accidents within a year (Mokhasi, 2017:58). According to the study, the business was aware of its safety issues but chose not to address them due to "high costs". After this tragedy, the Tribe was penalised and revised its safety procedures (Klara, 2019:55).

OSHA specifies how employers and employees should be safeguarded against occupational dangers. Injuries in warehouses are still common. Housekeeping is one aspect that includes keeping the workplace clean, tidy, and free of trips, slips, and falls. Preventing accidents requires careful consideration of warehouse architecture, storage, and upkeep (Mokhasi, 2017:88). Sonwabo has tried to enhance worker safety and productivity (Bridgestone Logistics, 2017:512). The amount of warehouse accidents that occur while workers are on duty lowers employee productivity and interrupts the supply chain. Injuries are rising owing to improper housekeeping. Warehouses and Distribution Centres need more safety since they offer numerous risks to visitors, particularly workers. Improved workplace health, increased employee productivity, lower costs, happy consumers, and a seamless supply chain are all advantages of safety (Kluwer, 2015:585-597). Warehousing and the management of warehouses are an integral part of the supply chain. Inbound supply chains help prepare for storing of goods while the outbound supply chain includes picking and packing functions for the benefit of both the business and customers (Bridgestone Logistics, 2017:302).

Figure 1.1 below demonstrate that there are obstacles impeding safe warehouse operations. These problems may be addressed in a variety of ways, starting with the implementation of an organisational strategy that handles the organisational elements of warehouse process management. The second stage would be to handle the human elements, which would include staff training, incorporating the five 'S' techniques (sort, put in order, shine, standardise, and sustain) into the warehouse operation, and instituting a compliance incentive system. The third step would be to carry out the plan by controlling the warehouse's technical elements (Skerlic and Muha, 2017:13).

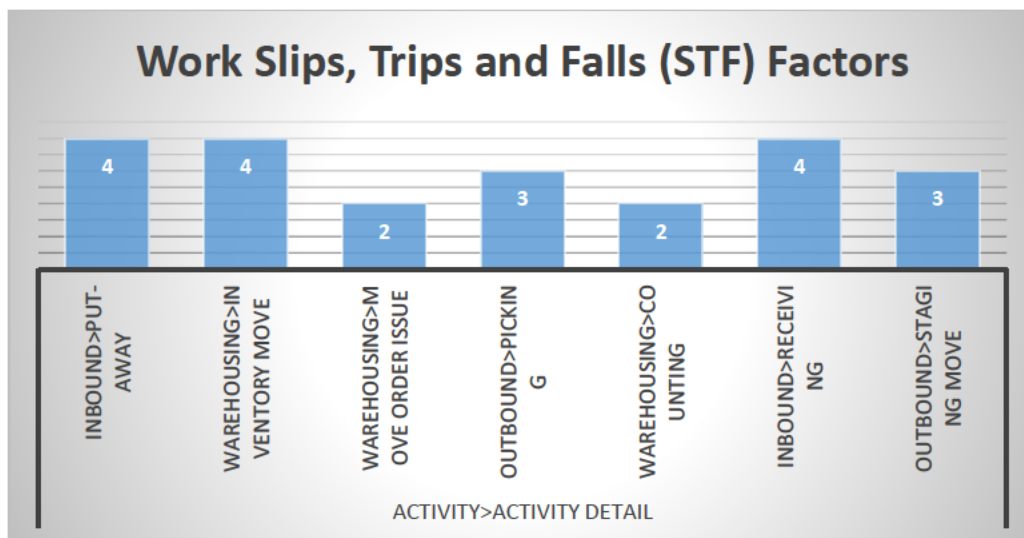


Figure 1.1: Possible Warehouse Incidents and Challenges

Source: (Klara, 2019:15)

Sonwabo is a logistics company that is a distributor for a chain of stores namely ABC as the main client/subsidiary, Truman, Dusk town, Debby's, Retro and Bee City. One of the key activities that take place in a warehouse is products and materials handling. This function exposes employees to workplace injuries primarily caused by operational equipment. Some of the injuries include falling objects from conveyor belts, loose clothing, hair, and hands getting stuck in conveyors, truck door hits, slips, trips, and falls (De Koster et al., 2017:6327-6330). Recently, one of the Sonwabo loaders was hit by a faulty belly door in one of the trucks which resulted in an accident. ABC along with Sonwabo logistics has implemented a material handling system called GLO, which aids in materials handling. This is a system that aims to improve the efficiency and effectiveness of the picking process. Previously, pickers would do picking in one aisle for one store before they move

on to the next. This system was not effective and efficient as it took longer for pickers to finish picking for one store before moving to another. With the GLO system in place, pickers can pick for two stores in the same rack/stack in the same aisle through voice automation that directs them to where and how they should pick (Young, 2019:25). This has improved the efficiency of picking and is cost effective as more time is saved during picking.

1.3 Research problem

Risk tolerance and the capacity to recognise hazards help to decrease the probability of repeat accidents and injuries. Numerous studies have been performed, but compliance with safety standards continues to be a problem in South African warehouses such as Petkova's (2018), Yoon (2019) and Zouinkhi (2018) on warehouse health and safety practises and/or compliance. Data indicates that the transportation and warehousing sector accounts for the second highest number of fatalities and its injury rate of 13.5 persons per 100,000 workers is around four times as high as the average injury rate across industries (Petkova's et al., 2018). Employees sustain injuries while doing their jobs; the frequency of warehouse accidents occurring while employees are on duty decreases employee productivity and disrupts the supply chain. The rise in injuries is attributed to a variety of factors, including poor or insufficient housekeeping, spills, trips, and collapsing stacks. The research then attempts to investigate/identify issues that impede the implementation of safe work practises in a warehouse and/or distribution centre. Several challenges are encountered in managing warehouse operations. While multiple approaches could be used to improve operations, there remains a bigger challenge to minimise or eradicate injuries and accidents in the workplace therefore this study examines what could be done to minimise the prevalence of injuries in the workplace.

Table 1.1 Fatal Occupational injury by event or exposure

Below is a table showing the number of warehouse operations injuries due to different factors, some of which are mentioned above (Xu et al., 2018:33)

Event/Exposure	2017	2018	2019	2020
Contact with objects/equipment	1004	1045	1017	915
Struck by object	557	556	590	546

Caught in or compressed by object	316	309	280	256
Caught in running equipment or machinery	159	151	147	131
Caught in or crushed in collapsing materials	110	138	132	99

The table above shows us that injuries related to obstructing objects or equipment, compressing objects, running equipment and/or caught in collapsing materials. This table depicts that these injuries started off high, with year 2017 showing 1004 fatal injuries, however over the years the numbers reduced to a low off 99 injuries. In every warehouse operation, there must be zero tolerance to occupational injuries which is why this study must be conducted with urgency to drive the number of injuries further down, possibly to zero (Xu et al., 2018:33).

1.4 Research questions

- What are the safety practises in retail warehousing operations?
- What are the factors that inhibit effective workplace safety in warehouse operations?
- To what extent do the safety legislative provisions, standard operating procedures, and housekeeping strategies influence warehouse safety level?
- To what extent do the warehouse mechanisation and automation influence employee safety for materials handling and ergonomics?

1.5 Research objectives

- To identify safety practises in warehouse operations
- To identify factors inhibiting the effective workplace safety practises in warehouse operations
- To examine whether the safety legislative section, standard operating procedures, and housekeeping strategy influence warehouse safety level

- To determine the extent of warehouse mechanisation and automation to influence employee safety for materials handling and ergonomics.

1.6 Conceptual framework

Key components of the conceptual framework are developed to create an understanding of the factors that inhibit safety practises in retail warehousing operations which are legislative framework, warehouse mechanisation and automation, warehouse operating systems, Occupational Health and Safety Act, Standard Operating Procedures as well as DC and Warehouse technology. The study will adopt the conceptual framework to establish factors inhibiting safety practises in warehouse operations.

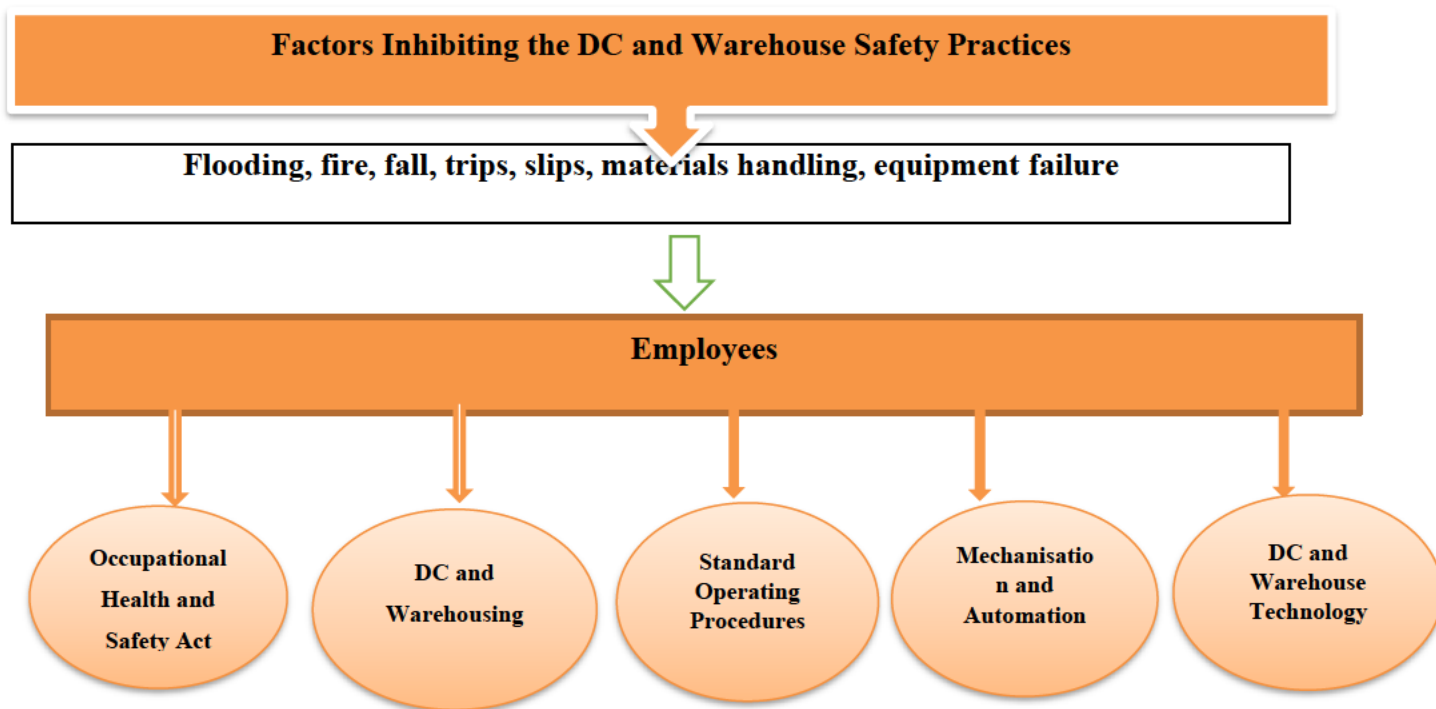


Figure 1.2: Conceptual Framework

Source: Researcher's compilation

1.7 Understanding Distribution and Warehousing centres

A Distribution Centre (DC) is a specialised structure used to store products for retailers and wholesalers, who subsequently resell them to end customers. Distribution centres play a critical role in order fulfilment for online merchants and e-commerce companies by using Enterprise

Resource Planning (ERP) systems (Cannonhill, 2017:155). A warehouse is described as "a structure used mostly for the storage of products by manufacturers, importers, exporters, and logistics firms" (Cannonhill, 2017: 158). The difference between both words is that warehouses are intended for long-term storage, while DCs are used for short-term storage, also referred to as cross docking. A Distribution Centre and Warehouse's function include serving as a consolidation point for make bulk/break bulk shipments, a cross docking terminal, a transshipments node, an assembly point, a product fulfilment site, or a returns facility (Wei, Jasin and Kapuscinski, 2017:333). When a DC performs the role of a create bulk/break bulk consolidation centre, it disaggregates big incoming stock to facilitate product mixing and/or the creation of consolidated loads for outbound logistics. When stock is consolidated, smaller loads are combined into bigger assortments, which aids in determining which goods will be sent together, which customer orders to combine, and when these orders will be issued. Consolidating encompasses not just these functions, but also functions such as who conducts these tasks, what methods will be utilised, and if these activities will take place in a DC or elsewhere (Lam, Choy, Ho, Cheng, and Lee, 2016: 763-779). A DC may be defined as a cross dock point where goods are received into the warehouse, loaded with other products bound for the same location, and delivered immediately without being stored for an extended period. Storage period for these goods is usually 48 hours, during which time sorting and consolidation occur prior to shipment. Cross docking reduces storage-related tasks such as inspecting or checking incoming goods, putting it away, storing it, replenishing it, and selecting. Cross docking, therefore, speeds up product flow, which enhances customer service by moving goods straight from receiving to dispatch. There is less product handling, which results in less product damage and less labour usage (Oakden, 2016:99).

The DC serves as a transshipment facility, where offloading goods from one truck and loading them onto another is undertaken. However, at this point, items may or may not be consolidated at this stage. When transshipments occur, the vehicle is decoupled, allowing for the use of bigger vehicles, and increasing the number of deliveries stops without breaking the vehicle's or route's length restrictions. Transshipments occurs when a vehicle's kind or method of transportation must be changed, such as when the vehicle is too tall to fit into the receiving bay (Vreis, Koster and Stam, 2016: 1377-1390). The assembly point is where consumers' orders are picked. The assembly team must ensure that they choose the appropriate goods in the appropriate amounts for the appropriate

client. Additionally, the DC serves as a product fulfilment centre since it is responsible for client orders for immediate delivering of goods to customers. These orders are submitted electronically. The DC then functions as a returns depot, which is also regarded to be a component of the reverse logistics system. This saves money by reintroducing returned goods into the forward distribution chain (Lutchman, Ghanem, Maharaj, 2016).

1.8 Warehouse Operations Systems

Managing a safe production process and maintaining an effective manufacturing operation are often characterised in contradictory terms, since some view prioritising and improving safety as distinct from increasing effectiveness, while others believe the two aspects operate in tandem (Pagell, Klassen, Johnston, Shevchenko, and Sharma, 2015:1-14). According to a recent study, these differences may be highlighted by looking at the operational and safety procedures employed in manufacturing systems. While the Occupational Health and Safety Act requires employers to maintain a safe and healthy work environment, workers may encounter hazards such as damp and slippery surfaces, high temperatures, walking near moving machinery, and dealing with sharp items. These circumstances or practises may result in serious harm or even death. These injuries or fatalities may impact not just workers, but also other stakeholders (such as visitors, contractors, or delivery people) who may be in the area at the time of the disaster. Employers should be vigilant for potential dangers by ensuring that all workers get safety training at hiring and yearly refresher training to keep them prepared for danger (Topie, Buchanan, Madden and Fagel, 2015:55).

A warehouse is primarily a passageway through which all products are received and delivered swiftly and effectively. As a result, the operational perspective emphasizes meeting client requirements on schedule, in full, and without incident. Automation and technology have become the standard in warehousing because they make it simpler and more efficient to process orders and pull them to deliver to consumers on time. In warehouses, the regular procedure is to receive products, process orders, restock, use value-added services, and ship the goods. The use of technology and automation accelerates this process, resulting in increased performance and more efficient resource management (Richards, 2017:19).

1.9 Warehouse Mechanisation and Automation

Business process demonstrations have made use of work processes to cope with concurrent invocations of isolated segments. With the development of Industry 4.0 Distribution Centre automation, which enables the combination of business processes, automated robots, sensor–actuators, and human factors, research and analysis of work processes have become critical. Due to the dynamic nature of such circumstances because of varying request rates and natural conditions, it is recommended that the work process creations be adaptable to runtime changes. Observing dormancy and optimal runtime constraints from start to finish is critical in contemporary setups, for example, warehouse computerisation. The authors provide details on the concurrent programming language that underlies most used work process architectures. Complex organisations, which include a variety of mechanical operators and commercial models, need further evaluation of their correctness, liveliness, and well-being properties. To validate the work processes, the GLO details are transformed to work process net representations and then validated using the GLO model checker. The advantages of conveying fine-grained examination of work processes over picker/conveyance robots used in Distribution Centre jobs. The envisioned collection of reusable details may be expanded and used to a variety of Industry 4.0 configurations to manage complicated work process communications (Kattepur, 2019:78-89).

1.10 DC and Warehouse Technology

Distribution Centre duties must evolve in response to the increasing complexity and variety of customer orders (Lam et al., 2016). The need for continuous information and pertinent data is necessary considering the profoundly changed demands of the business market, which will often be little clumps with a high degree of variety. Because client requirements vary on a regular basis, it is essential to synchronize procurement requests to aid in their development and to ensure on-time request fulfilment. In any instance, the inefficient and erroneous request selection procedure influences the satisfaction of the request (Lee, Ho and Choy, 2018:2753-2768).

1.11 Research methodology

Research methodology is a way in which data is identified, selected, and analysed in a certain topic. It allows the reader to evaluate the study's validity and reliability and answer questions of how the data was collected and analysed. This study employed an exploratory case study research

design, while a non-probability sampling method that uses both convenience and purposive sampling was adopted.

1.12 Contribution of the study

Enhancing employee safety in a warehouse via cleaning increases staff productivity. Petkova (2018), Yoon (2019) and Zouinkhi (2018) further elaborate in their studies the importance of warehouse health and safety practises. The inbound and outbound operations also play a vital role in ensuring that customers (retailers and wholesalers) are satisfied. Customer satisfaction results in a smooth operation of the whole supply chain.

1.13 Rationale

Due to the paucity of research on how human factors influence warehouse operations, the aim of this study is to investigate/identify issues that impede the implementation of safe work practises in a warehouse and/or distribution centre. Studies done by Eriksson (2018), Stoltz (2017) and Klodawska (2017) also report that there is not enough research on the effect of human factors on warehouse operations. Which once again indicates the necessity and the importance of this research project.

1.14 Ethical considerations

Ensuring participants have given informed consent: The term "informed consent" refers to the critical necessity of educating participants about the research study's nature. Participants in the study may provide informed consent only if they have a comprehensive knowledge of the study's purpose and the extent to which they are being asked to participate in the research endeavours. To satisfy the above mentioned, the researcher has informed respondents explicitly about the kind of activity, the subjects that the study aimed to address. Additionally, participants were informed of their right to withdraw from the study (Eriksson, 2018:11).

Ensuring no harm comes to participants: Researchers must take care to guarantee that no harm of any nature is done to study participants (Stoltz, 2017:12). To guarantee that no participant is held accountable for his or her opinions, formal authorisation from the relevant warehouse was requested and provided.

Ensuring confidentiality and anonymity: The researcher should take care to safeguard the confidentiality of all participants (Klodawska, 2017:33). To preserve the anonymity of participants, the researcher will limit access to raw data by securely storing all data, presenting results in a way that prevents individuals from being easily identified, and seeking consent for future use of data. Additionally, results from this research will be aggregated to reflect a collective perspective of all participants, using acronyms to maintain anonymity”.

Ensuring that permission is obtained: It is critical to clear official channels by officially seeking authorisation to conduct a research. Access to respondents is a critical component of the research (Klodawska, 2017:33). To address this, the UKZN Research Committee's ethical clearance for this research was sought, as well as a gatekeeper's letter from the warehouse management at the organisation's head office.

1.15 Restrictions

Considering the natural scarcity of resources involving such variables as financial constraints, time and accessibility, the interview process was done during work hours to allow for availability and full cooperation. Consequently, the researcher ensured to collect data from a representative sample of the broader group population (Garbers, 2018:845).

1.16 Delimitations

The researcher conducted the interviews during time off and/or lunch and break times of employees so as not to disturb operations and therefore, full cooperation was obtained. For future study, the researcher would like to have multiple case studies on the warehouses and distribution centres.

1.17 Conclusion

The study's background, as well as the problem statement, research objectives, and questions, were all addressed in this chapter. This chapter provided an overview of the topic under investigation and explained the following key points: the research problem, the rationale for the study, and the study's objectives. The reader will learn about the relevant literature evaluated in the next chapter,

as well as the theoretical framework used in this study. The study continues to provide both theoretical and supporting facts to this investigation based on this premise.

Safety is a vital component of every organisation, and it must get the attention it deserves to ensure the success of the enterprise. Every organisation should make a concerted effort to enhance its safety performance on a continual basis. To attain safety excellence, innovative methods must be integrated into established safety management procedures. Safety in the workplace is a wide subject that must be examined in conjunction with organisational culture, leadership styles, employee attitudes and behaviours, and communication and performance management systems. According to this study, culture influences behaviour, therefore, it is critical to instil the appropriate culture in the organisation, which should subsequently match employee beliefs and practises with SHE objectives. Because certain elements of safety, such as attitude, are difficult to quantify directly, it is beneficial to have systems in place that track employee safety performance and overall organisational safety. The present study sets the groundwork for future safety investigations.

CHAPTER TWO:

LITERATURE REVIEW

2.1 Introduction

This chapter discusses the factors that inhibit safety practises in warehouse operations, and it further navigates the definitions of the general concepts of supply chain management including warehouse systems. An operational supply chain delves into the legislative aspects of the Occupational Health and Safety Act (OHSA) in relation to warehouse operations, Distribution Centre (DC) mechanisation and automation as well as warehouse technology. The conceptual framework engages the aforementioned factors and the employee interaction thereof. The OHSA underpins these factors and how they affect the overall warehouse operations and the supply chain.

2.2 Background of the study

Housekeeping is one of the difficulties that hinders warehouse safety. Formal training on warehouse injuries reduces the likelihood of injuries and fatalities (Lopez Del Puerto, Fontan-Pagan, Molina-Bas and Mrozowski, 2016:23). Exploring the nature of health and wellness problems in the construction and retail industries, as well as the challenges encountered, is critical (Carmichael, Fenton, Pinilla-Roncacio and Sadhra, 2016:2630). In the study conducted by these authors it was found that the safety concerns were prevalent in the construction sector and tended to be more holistic in the retail sector. In the construction sector, Warehouse injuries were significantly associated with industrial practises such as temporary and subcontracting employment, as well as work hours and masculinity. In contrast, the retail industry placed a premium on employee well-being and job happiness. It shows that there is not enough research on the factors that inhibit safety practises in retail warehousing operations.

2.3 Supply chain management

Supply chain management is the complete flow of materials from suppliers to the final consumer. This includes the flow of goods and services from being raw materials to finished goods, from the point of manufacture to the point of sale (POS) (Bahari, Azman, Mohd, Ayub and Habidin, 2017: 229-234). Hugos (2018:27) defines supply chain as a business and the activities necessary to design, manufacture, and deliver a final product to a customer, whereas Christopher (2016:13) defines supply chain as the management of upstream and downstream relationships between suppliers and customers to deliver the best value to the customer at the lowest possible cost to the

supply chain. In most supply chains, a facility is required to ensure that the human capital, equipment and/or machinery can do the work safely with minimum hazards (Bahari et al., 2017: 229-234).

The supply chain industry proves to have less focus on the safety of employees through safety activities and dealing with different issues related to employee safety behaviour. This results in prevalent safety injuries in the workplace (Jermstittiparsert, Sriyakul, Sutduean and Singa, 2019:2959-2966). Employee commitment is vital in ensuring supply chain employee safety behaviour and keeping accidents to a minimum. Supply chain plays a huge role in this study as it is centred on the safety of employees in supply chain operations. Warehouses and DCs can be found in different locations however the determinants for this are the distribution strategy, internal activities as well as characteristics of the distribution operations. Common locations for these are close to ports, harbours and/or where the target market is depending on the products and services that are being provided (Vieira, Toso, Silva and Ribeiro, 2017:246-259).

2.4 Safety management of warehouse operations

Safety and risk management is the process of defining behaviour and enforcing safety rules, procedures, and standards, and practises in all parts of the business-in this case a warehouse (Jokkaw and Tongthong, 2016:34). Furthermore, Safety and risk management are the processes by which systems are implemented to detect, comprehend, and control the occurrence of risks to avoid accidents and events that impact warehouse and supply chain operations (Bahari et al., 2017: 229-234). Safety and risk management in warehousing is the main factor to achieving a sustainable and safe supply chain (Trab et al., 2018:88). Risk managers must evaluate all possible risks and take steps to minimize the probability and severity of risk events; otherwise, the business risks suffering significant losses that may have a negative effect on its workers and organisational performance (Webb, 2019:18).

Numerous challenges impair warehouse safety procedures, including cleaning. Through formal training, increasing awareness of warehouse injuries helps to reduce the likelihood of injuries and fatal incidents (Lopez Del et al., 2016:2618). Numerous events may occur because of inadequate safety and risk management, including floods, fire, improper handling of environmentally hazardous chemicals, employee safety, product damage, and equipment failure (Webb, 2019:20). In warehouses, effective risk and safety management is critical for detecting risks and forecasting

possible losses. It has been proven that keeping track and reporting near accidents and/or near-miss trends can help the organisation lower the likelihood and impact of losses, reduce claims, and maintain a safer working environment for the employees and visitors (Trab et al., 2018:80).

2.5 Conceptual Framework

A theoretical framework is a comprehensive and well-established collection of rules, facts, or principles that serves as the foundation for the research. The theoretical framework is followed by the conceptual framework, which is an examination of a particular element of the theoretical framework (Mulder, 2017:10). A conceptual framework is a tool that is used to analyse several variables and contexts. It is used to make distinctions on concepts and organising ideas. It can be used on both large and small scales as well as various concepts, it is an abstract representation which answers what and or why questions for a phenomenon of explanatory research. The conceptual framework makes research findings more meaningful and acceptable to the theoretical constructs in the research field and ensures generalisation which is why the present study employed the conceptual framework to arrive at the hypotheses of the study (Edigate, 2019:12).

Key components of the conceptual framework are developed to create an understanding of the factors that inhibit safety practises in retail warehousing operations which are legislative framework, warehouse mechanisation and automation, warehouse operating systems, Occupational Health and Safety Act, Standard Operating Procedures as well as DC and Warehouse technology. The OHSA underpins this study as all the factors are affected by the safety of employees in the workplace depicted in the figure below.

Figure 2.1 Conceptual Framework

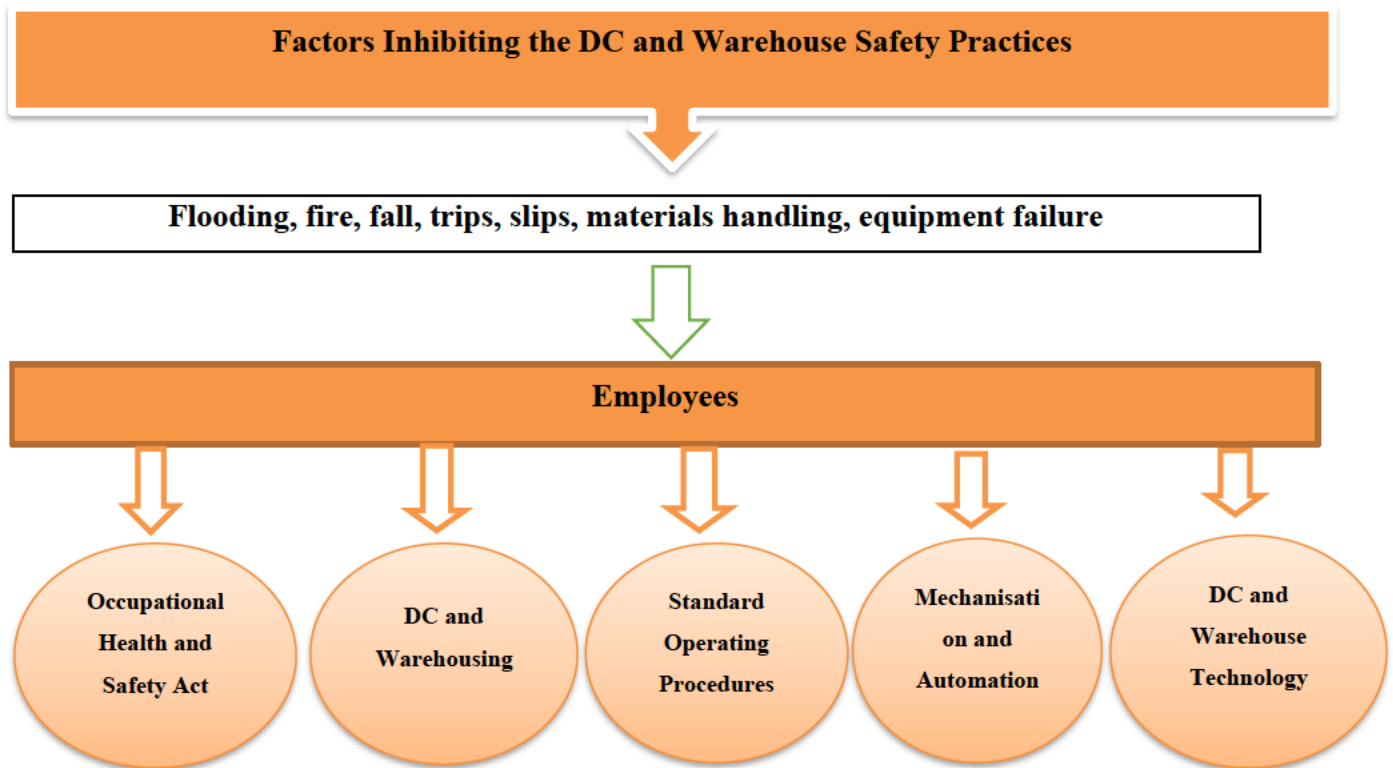


Figure 2.1: Conceptual Framework

Source: Researcher's compilation

Safety management is a process of determining the behaviour and implementation of safety policies, procedures, and practises in all parts of a business-for the purpose of this study, a warehouse (Jokkaw and Tongthong, 2016:34). The previous authors further state that safety management is the implementation of systems used to identify, understand, and control the occurrence of hazards to prevent injuries and incidents that affect the operations in a warehouse environment and the supply chain. Numerous obstacles impair warehouse safety measures, such as cleaning. Through formal training, increasing awareness of warehouse injuries helps reduce the possibility of injuries and catastrophic incidents (López Del Pet al., 2016:23). Examining the nature of health and wellness problems in the construction and retail industries, as well as the challenges associated with their resolution. According to the authors' preliminary literature review,

safety issues were more common in the construction industry and more holistic in the retail sector. In the construction sector, causes were significantly associated with industrial practises such as temporary and subcontracting employment, as well as working hours and outside, dangerous physical work. In contrast, the retail industry placed a premium on employee well-being and job satisfaction. This demonstrates a lack of research on the issues obstructing safety practises and procedures in retail warehousing operations (Carmichael et al., 2016:251).

2.5.1 Occupational Health and Safety Act (1993)

It is essential to protect the health and safety of workers and others who encounter equipment and machinery to minimize and/or avoid accidents. Although warehouse housekeeping injuries are still common, the Occupational Safety and Health Act 1993 (OSH Act) explicitly specifies "how an employer and employee should be safeguarded from occupational risks" (Arntz-Gray, 2016:84). Prior to turning to Personal Protective Equipment, the employer's responsibility under this legislation is to offer information, teaching, training, supervision, and safe work methods (PPE). This act's purpose is to safeguard workers from occupational injuries. The purpose of this study of the literature is to determine the variables that influence employee involvement in workplace safety initiatives, specifically in a warehouse. Accidents occur because of passive employee involvement in workplace safety initiatives (Reese, 2018:35). Additionally, there has been a growing understanding of safety's direct effect on company profitability, staff productivity, consumer perception, shareholder value, and operational excellence (Yanar et al., 2018:15).

2.5.2 Legislative Framework: OHS Act (1993)

It is essential to protect the health and safety of workers and others who encounter equipment and machinery to minimize and/or avoid accidents. The Occupational Safety and Health Act 1993 (OSH Act) specifies how an employer and employee should be safeguarded against working risks. However, warehouse housekeeping injuries continue to be a problem. Prior to turning to Personal Protective Equipment (PPE), the employer's responsibility under this legislation was to offer information, teaching, training, supervision, and safe work methods. This act's purpose is to safeguard workers from occupational injuries. The purpose of the review of preliminary literature was to determine the variables that influence employee involvement in workplace safety programs, specifically in a warehouse. Accidents occur because of passive employee involvement in workplace safety programs. Additionally, there has been a growing understanding of safety's direct

effect on company profitability, staff productivity, consumer perception, shareholder value, and operational excellence (Tempesti, 2014:85).

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2.5.3 Distribution Centre and Warehouse

A Distribution Center (DC) is a specialized facility that stores products for merchants and wholesalers to resell to end customers (Cannonhill, 2017:19). Enterprise Resource Planning (ERP) systems, a type of software that allows the integration of sustainable processes, information, and data at every level of an organization's value chain, help distribution centers play a crucial part in order fulfillment (Chofreh, Goni and Klemes, 2017:425-437). A warehouse is a structure that is primarily used to store goods for manufacturers, importers, exporters, and logistics companies (Cannonhill, 2017:38). The distinction between the two terms is that warehouses are used for long-term storage, whilst DCs are used for short-term storage, commonly known as cross docking. Throughout this study, these terms will be used interchangeably. A DC, or warehouse, is a storage facility utilized for both short- and long-term storage with the goal of redistribution, according to the study's primary principle (Bhangu, Anand and Kumar, 2019:52).

A distribution centre/warehouse may serve as a point of consolidation for make-bulk/break-bulk products, a cross docking terminal, a transshipment node, a point of assembly, a point of product fulfilment, or a point of returns (Wei et al., 2017:333). When a DC performs the role of a create

bulk/break bulk consolidation centre, it disaggregates big incoming stock to facilitate product mixing and/or the creation of consolidated loads for outbound shipment (Abushaikh et al., 2018:80). When stock is consolidated, smaller loads are combined into bigger assortments, which assists in determining which goods will be sent together, which customer orders to combine, and when will these orders be issued. Consolidating not just these functions, but also variables such as who will carry out these duties. Which particular methods will be utilised, and whether these tasks will be performed in a DC or elsewhere (Lam et al., 2016: 763).

A cross dock point is a location where goods are accepted into the warehouse, loaded with other products bound for the same destination, and delivered as quickly as possible without keeping them for an extended period. Storage period for these goods is typically 48 hours, during which time sorting and consolidation occur prior to shipment (Oakden, 2016:55). Cross docking reduces storage-related tasks such as inspecting or checking incoming inventory, putting away, storing, restocking, and picking (Vieira et al., 2017:248). Cross docking speeds up product flow, which enhances customer service by moving goods straight from receiving to dispatch (Oakden, 2016:72). There is less product handling, which results in less product damage and less labour usage.

Combinations may or may not occur at a transshipment facility, where products are unloaded from one truck and loaded into another. During transshipments, the vehicle can be detached. Allowing larger trucks to be used and increasing the number of delivery stops without violating vehicle or route length constraints. When a vehicle's kind or mode of transportation must be altered, such as when the vehicle is too tall to fit into the receiving bay, transshipments occur (Vreis, Koster and Stam, 2016: 1377-1390). Intermodal transportation refers to multimodal chains or networks that comprise at least two modes of transportation, with freight packed into "containers" and not handled at intermodal-transfer stations along the route from origin to destination. Transportation involving several modes of transportation is thus defined as a system that includes a wide range of stakeholders, decision makers, operations, and planning activities (Crainic, Perboli and Rosano, 2018:401).

Consumer orders are picked up at the assembly point (Vieira et al., 2017:240). The assembly crew must make certain that they choose the right goods in the right quantities for the right client. In addition, the DC works as a product fulfilment centre, as it responds to consumer requests by

delivering goods to customers right away (Vreis et al., 2016:1380). The DC then serves as a returns depot, which is also considered part of the reverse logistics chain (Lutchman, Ghanem and Maharaj, 2016:32). Reverse logistics is a method for maximizing resource use and minimizing waste after goods are ready for disposal while adhering to applicable laws and green principles. This saves money by reintroducing returned goods into the forward distribution chain (Sirisawat and Kiatcharoenpol, 2018:303).

Supply chains that require longer storage often make use of warehouses where the production output can be stored for long periods of time and consignments are dispatched in larger loads e.g a container load. Such warehouses can be used to keep a constant flow of goods to the DCs that are quite distant through linehaul deliveries. This also gives shorter deliveries an advantage since orders from retail stores are provided by a nearby DC. The economies of scale are also a possibility to benefit through bigger vehicles and higher load utilisations (Rodrigue, 2020:468).

2.5.4 Warehouse Standard Operating Systems

Managing a safe and regularly, efficient production system is defined in contradictory terms, as some regard putting safety first and improving it as distinct from expanding, while others feel the two factors work together (Pagell et al., 2015:1-14). These differences, according to recent study, can be explained by looking at the operational and safety rules for the production system (Crainic et al., 2018:412).

Workers may confront hazards such as moist and slippery surfaces, high temperatures, walking near moving machinery, and interacting with sharp materials, even though employers are mandated by the Occupational Health and Safety Act to provide a safe work environment and healthy workplace. Not only may these situations or behaviours cause harm, but they could even cause death. Other stakeholders (such as visitors, contractors, or delivery persons) who may be in the vicinity at the time of the accident may be affected by these injuries or fatalities. This process may be accelerated via the use of technology and automation, resulting in increased performance and more efficient resource management (Richards, 2017:30).

While Employers are required by the Occupational Health and Safety Act to ensure a safe work environment and healthy workplace, workers may encounter hazards such as damp and slippery

surfaces, high temperatures, walking near moving machinery, and dealing with sharp items. Not only may these circumstances or actions result in harm, but also in death. These injuries or fatalities may impact not just workers, but also other stakeholders (such as tourists, contractors, or delivery people) who may be in the area at the time of the disaster. Employers should be vigilant for potential dangers by ensuring that all workers get safety training at hiring and yearly refresher training to stay prepared for danger (Topie et al., 2015).

A warehouse is, first and foremost, a passageway through which all products are received and delivered as efficiently as possible. As a result, an operational perspective emphasises meeting client requirements on schedule, in full, and without causing harm. Automation and technology have become the standard in warehousing because they make it simpler and more efficient to process orders and pull them to deliver to consumers quickly. Warehouses follow a regular procedure of receiving products, processing orders, replenishing, using value-added services, and dispatching the goods. This process may be accelerated via the use of technology and automation, resulting in increased performance and more efficient resource management (Richards, 2017:30).

2.5.5 Warehouse Mechanisation and Automations

Warehouse mechanisation and automation is the process of reducing human participation in operations while increasing efficiency via the use of mechanics and robots (Pervaiz, 2020:08). Warehouse automation, often referred to as system automation, is the process of digitizing manual activities such as inventory data collection and integrating them into software such as an Enterprise Resource Planning (ERP) system. Later, this data may be accessed. On the other hand, warehouse mechanisation refers to the use of robotic technology in the warehouse to maximize the Return on Investment (ROI) for high-volume warehouse and distribution centre operations. Both technologies allow warehouse processes to develop beyond human capability by automating routine and time-consuming jobs, freeing up warehouse workers to focus on more important duties that need human contact (Caudell, 2018:15). Warehouse mechanisation and automation improves the quality of production and reduces injuries where a warehouse is understaffed thereby overworking employees. The U.S Bureau of Labour Statistics (2018) show that 51 out of every 100 warehouse employees experience injuries or work-related illnesses each year. For manual order pickers, most common injuries include muscle and joint pain, lifting heavy products,

twisting, strains to chronic conditions like cumulative trauma disorders and injuries, motion and stress injuries resulting from repetitive strenuous motions (Rickard, 2019:20). The robust increase in technologies has changed the way in which businesses operate, consumer buying trends as well as where these activities take place. These technological advancements have a great impact on business operations on the overall organisation. However, logistics and supply chains are reaping the benefits of digitization which allows them to increase efficiency and productivity while providing the best customer service (Mahroof, 2019:178).

Work processes have been used to handle concurrent invocations of isolated components in business process demonstrations. With the introduction of Industry 4.0 in Distribution Centres, which allows business process integration, automated robots, sensor–actuator systems, and human factors, work process research and analysis has become essential. Due to the dynamic nature of such situations caused by changing request rates and external elements, it is recommended that the work process creations be adaptive to changes in the runtime environment. Observing from the start to finish dormancy and ideal runtime restrictions is basic in modern arrangements, for example, warehouse computerisation. The system developers give particulars in the simultaneous programming language that underpins most normally utilised work process designs (Moore, Upchurch, and Whittaker, 2018:10).

2.5.6 Distribution Centre and Warehouse Technology

Technology in the warehouse serves as a link between procurement, manufacturing, and distribution (Knell, 2019:30). The warehouse technology industry is concerned with the storage and delivery of products and is inextricably connected to the materials handling process. Despite continuous technology advances, most supply chains continue to struggle to embrace them. This is mostly because it may be difficult to get buy-in from all decision makers and the value that the technology brings to the business may not be readily apparent to everyone. Another barrier to adopting new technology is the availability of qualified labour to run the systems, which forces businesses to retrain existing workers and hire external expertise (Bowles, 2020:07). Among these warehouse technologies are goods-to-person robots, autonomous forklifts, inventory robots, portable gadgets, and pick-to-voice systems such as scanner guns and microphones. These technologies, which include sensors and machine learning capabilities, can transport large amounts

of goods that would be difficult to move without this equipment, as well as doing daily inventory counts through Radio Frequency Identification (RFID) (Kneill, 2019, 40).

The migration to the digital world remains an on-going process in warehousing and Distribution Centres by Artificial Intelligence (AI) and Internet of Things (IoT) as it allows this industry to track products much faster and more accurately (Gresham, 2017:2). The application of AI in warehouse operations improves warehouse functions in the logistics, management, and planning. AI in warehousing makes it a smart environment for automated operations through the retrieval of orders with IoT and cloud computing to have access of the available stock in the warehouse (Pandian, 2019:63). The Internet of Things (IoT) is a networked computer system that utilises Unique Identifiers (UIDs) to transmit data. IoT may be used to monitor real-time storage conditions of goods and provide transparency to improve operational efficiency in warehouse operations (Sharma, Kaur and Singh, 2020: 08).

As the complexity and diversity of client requests increase, Distribution Centre duties must evolve. Given the fundamentally changing demands, which will frequently be small clusters with a high degree of diversity, the requirement for constant information and meaningful data is critical. Because client needs change on a frequent basis, it's critical to synchronize procurement requests to aid in their growth and assure request fulfilment on time. In any case, an inefficient and imprecise order-picking procedure reduces client satisfaction (Lee et al., 2018).

2.6 Safety Practises in Warehouse Operations

The literature has many definitions of safety culture. According to the Health and Safety Commission of the United Kingdom (HSE, 2018:9) the term "safety culture" refers to the combination of individual and collective efforts. Views, values, competencies, attitudes, and patterns of behaviour that influence an organisation's degree of commitment to, and competency with, safety and health management (Antonsen, 2017:10:15). Warehouse housekeeping entails a range of tasks that add to the warehouse's overall cleanliness. A clean and safe work environment is not limited to sweeping and taking away garbage at the end of the day (Utami, Fetrina and Rizkiah, 2017:25). This is done to minimize workplace injuries and increase safety, which increases productivity (Hale, 2016). Scott (2016) states that poor housekeeping may result in accidents such as trips, falls, and slides. The advantages of excellent housekeeping include assisting the business in defining efficient procedures via a shift in viewpoint, reducing

maintenance costs, and enhancing the company's safety culture. According to the General Safety Rules Act of 1986, the minister of manpower has issued the regulations set out in the schedule hereto according to section 35 of the Machinery and Occupational Safety Act, 1983 (Act 6 of 1983). (Sarkar et al., 2019:210).

Numerous definitions incorporate group-wide values, beliefs, and attitudes as part of safety culture. According to research, there are between two and nineteen distinct indicators of safety culture, ranging from management to risk awareness and perspectives and attitudes toward the safety environment (Ardeshir and Mohajeri, 2018:79). The most often cited markers of safety culture include risk awareness and risk taking, leadership style and communication, management and worker commitment, individual accountability, and management responsibility. Because individual human actions (safe/unsafe) are affected by personal attitudes, values, and beliefs, workplace safety is based on shared individual and organisational perspectives on the essential importance of safety (Utami et al., 2017:250).



Figure 2.2: warehouse productivity

Source: (Dear Systems, 2018:29)

Providing workers with the necessary safety amnesties contributes to the reduction of workplace accidents. This may be done by strategically installing bright lighting throughout the warehouse, optimizing the ergonomics of workstations and equipment, performing frequent safety audits of

the equipment and facility, and following specified warehouse safety laws and regulations. (Dear Systems, 2018:35). The graph above illustrates production metrics ranging from outstanding to sluggish to standard. This is determined by the extent and frequency with which safety measures are implemented in the workplace. The factors include training employees in proper warehouse safety practises, which will increase their awareness of safety procedures, requiring employees to use warehouse protective gear such as goggles, gloves, safety boots, and reflector vests to prominently display warehouse safety and emergency protocols. (Kusrini et al., 2018:1058). This assists in directing workers toward areas of safety when danger is present.

2.7 Safety Factors Inhibiting Warehouse Operations

Risk tolerance and the capacity for risk identification influence the recurrence of accidents and injuries (Fuentes-Bargues, Revuelta-Aenao and Gonzalez-Cruz, 2019:300). Safety culture should prioritise education and reporting above blaming (Antonsen, 2017:12). Numerous studies have been done on safety. However, compliance with safety standards (e.g., housekeeping) continues to be a problem within the South African industry (Sarkar et al., 2019:212). Numerous studies, such as those performed by Robert Cooke ((2017), Allison (2016), and The Reliability Group (2016), show that a variety of factors influence accident rates. These indicators include the organisational culture and weather, as well as security atmosphere and culture, the work environment, personnel selection processes, role clarity, kinds of work procedures, and as well as job satisfaction, stress, and housekeeping. Foster (2018) found five main indications of possible safety accidents caused by environmental, physical, agronomic, and psychological stress in similar research.

Some of the safety challenges faced by employees in a warehouse are as follows:

Heavy equipment: Every employer needs to make sure that employees are aware of potential dangers from the machines they operate as they tend to get too comfortable with the machinery they work with because they are used to it. This is an advantage for productivity but may pose great danger for the employee if not well attended to (Newcastle Systems, 2017:89).

Slips and trips: Some of the factors that result in slips and trips are loose material on the floor such as paper, shrink wrap, wet floor, boxes and more. This part may seem as easily avoidable, but such accidents do happen in warehouses because employees are rushing for productivity rates.

One way to avoid this is using anti slip tape on the floor to prevent the occurrence of slips in the warehouse (Lee et al., 2018:2753).

Each employee in each organisational unit is accountable for ensuring that their work processes are viable and always improving. Top management should provide the groundwork and create an environment conducive to collaboration both inside and between authority divisions to enable employees to advance forms. Standard Operating Procedures (SOP) are detailed reports that describe how an administrator should do a certain task (Hofstra, Petkova, Dullaert, Reniers and De Leeuw, 2018:134). SOPs cover the purpose of the activity, the hardware and materials required, how to carry out the procedure's setup and tasks, how to carry out the labourer's support and shutdown activities, a description of health and safety concerns, troubleshooting, and a rundown of additional parts and where to locate them, outlines, and agendas (Onyemeh, 2017: 55).

2.8 Warehouse Safety Levels

Every employee in every organisational unit is answerable for ensuring that their work forms are viable and ceaselessly showing signs of improvement (Bahari et al., 2017: 229-234). Top administration ought to give the preparation and a proper persuading condition to help cooperation both inside and across authoritative units for workers to propel forms. Standard Operating Procedures (SOP) is a procedure report that portrays in detail the way that an administrator ought to play out a given activity (Hofstra, et al., 2018:134). SOPs include the motivation behind the activity, the hardware and materials expected, how to play out the set-up and tasks required for the procedure, how to play out the support and shutdown activities completed by the labourer, a portrayal of wellbeing issues, inconvenience shooting, a rundown of extra parts and where to discover them, outlines, and agendas (Onyemeh, 2017:33).

2.8.1 Legislative Provisions

Each employee in each organisational unit is accountable for ensuring that their work processes are viable and always improving. Top management should provide the groundwork and create an environment conducive to collaboration both inside and between authority divisions to enable employees to advance forms. Standard Operating Procedures (SOP) are detailed reports that describe how an administrator should do a certain task (Hofstra et al., 2018:134). SOPs cover the purpose of the activity, the hardware and materials required, how to carry out the procedure's setup and tasks, how to carry out the labourer's support and shutdown activities, a description of health

and safety concerns, troubleshooting, and a rundown of additional parts and where to locate them, outlines, and agendas (Onyemeh, 2017: 55).

2.8.2 Standard Operating Procedures

Safety policies and procedures demonstrate management's commitment to the health and safety of its employees. Employers and employees' duties and accountability are clearly defined in policies (Weekes, 2017:97).

2.8.3 The Influence of Housekeeping Strategies

Heavy materials: Inadequate or insufficient training of workers on the materials with which they will be working or may be required to work leads to hazardous materials that fall on workers. According to a recent Occupational Safety and Health Administration research, two employees die on average each month because of objects falling on them and crushing them to death. (Lam et al., 2016: 779).

Moving components are a significant issue in warehouse safety. Employees must be mindful of warning signs on the equipment they operate, since moving materials may be very hazardous if not handled properly (Weekes, 2017:56).

Falling things: Because warehouses have a lot of goods piled up high, falling objects constitute a health hazard. The simplest method to prevent this occurrence from happening often is to stack heavy items neatly to avoid them from collapsing on workers when they attempt to transfer or carry them from point A to point B. (Hofstra et al., 2018:139).

2.9 Warehouse Mechanisation and Automation Safety for Materials Handling

Warehouse mechanisation enables the warehouse operation to accomplish more prominent results with essentially less effort using at least one technology. The best warehouse automation solutions are versatile, ergonomic, and give an arrival on speculation (ROI) in months, not years (Kapulin, Chemidov and Kazantsev, 2017:2060). Process automation, in some cases alluded to as a framework mechanisation, which digitises manual procedures like stock information assortment and incorporates that information into product condition, for example, database or Enterprise Resource Planning (ERP) framework (Pervaiz, 2020:29). This kind of mechanisation runs on a biological system of barcoding and remote standardised tag scanners to track information, which is then conveyed by means of programming to a brought together archive where the data is put

away for future recovery (Caudell, 2018:35). Some of these warehouse mechanisation and automation tools include the following:

Employee education and encouragement are necessary for both accident prevention and personal safety. Employees that take an active role in hazard identification, risk assessment, and the recommendation of preventative actions to avoid occurrences and accidents. Employees of all ranks should be provided with the required abilities to detect risks, propose appropriate control measures, and give sufficient feedback, thus assuming full responsibility of workplace safety (Kattepur, 2019:89).

Ergonomics: Employers may take many ergonomic measures to protect employee safety, such as the correct method of lifting items off the floor. However, workers must be responsible and take care of themselves to avoid injuring themselves via carelessness or mistreatment of their bodies (Newcastle Systems, 2017:85).

2.9.1 Actions and priorities of the administration

Management's actions and objectives must convey to workers that business success and safety performance are compatible by demonstrating their commitment to the Occupational Safety and Health Act (SHE). Management must set an example for workers to follow when it comes to safety culture (Chang, 2016:96).

The organisation's reaction to hazardous behaviours is a feature that leads to the growth of a good safety culture. A blame-and-punishment culture is not conducive to accident prevention, as research has shown (Kapulin et al., 2017:2060). When hazardous behaviour is discovered, appropriate action is done to increase employee involvement in safety rather than create fear. Recently, companies have embraced a culture of no name, no blame with the goal of preventing accidents by eliminating safety obstacles and altering employee attitudes toward safety throughout the incident investigation (Kattepur, 2019:80).

Employees buy-in (involvement): Effective interaction is often associated with employee engagement and participation in health and safety initiatives, as well as other organisational aspects (HSE, 2018:7). Employees buy-in occurs when workers believe their voices are heard inside the company. This entails engaging workers in the development and communication of health, safety, and environmental standards. When direct supervisors and management solicit

feedback from all levels on safety continuous improvement, the safety atmosphere among employees improves, as does their attitude toward workplace safety. Additionally, an organisational culture of safety is fostered (Chang, 2016:78).

2.10 Conclusion

A review of pertinent literature on warehouse safety practices and operations was offered in this chapter. However, there is a broad consensus in the research that purposeful steps to increase workplace safety should be implemented. Leading and trailing safety performance indicators are the two types. Employee involvement in improving workplace safety, tasks, and hazard analysis is one of the most proactive methods of safe behaviour.

The OSH Act classifies safety performance metrics differently. There are two types of safety performance indicators: leading and trailing. The most proactive measures of safe behaviour are those that demonstrate employee involvement in Enhancement of workplace safety, duties, and hazard analysis. These are lagging indicators which are reactive in nature and provide information on the frequency of events. They are included in safety performance indicators. The workplace safety culture's outcome variables are to promote safe behaviours while lowering the incident rate. As a result, the present research examined independent factors outside procedures and regulations, such as individual and organisational beliefs and behaviours. The study methodology is discussed in the following chapter, which includes extensive information regarding the demographic, sample size, questionnaire design, data collecting procedure and analysis.

CHAPTER THREE:

RESEARCH METHODOLOGY

3.1 Introduction

Research is the methodical collection and rational analysis of facts with the intent of achieving a certain goal (Phillippi and Lauderdale, 2018:388). However, this is a rather typical description since many techniques are employed to examine an issue or subject. The techniques of research (conclusive of research methodology) refer to the procedures used to gather and analyse data. These techniques have been created to ensure the reliability and validity of knowledge acquisition. A research technique is methodical and deliberate, with the objective of generating data on a certain study topic (Kumar, 2017:35). Fundamental philosophical ideas and ideals regarding reality's nature and the scientific quest of knowledge are included into research paradigms (Park, Konge and Artino, 2020:694). There are two fundamental schools of thinking: positivism and phenomenology are two schools of thought about science and knowledge. These scholars have radically opposed perspectives on study methodology and design.

This chapter will introduce and discuss the rationale for the study's research methodology. The chapter starts by restating the study issue, defining qualitative research philosophically, and outlining the research strategy. The principles of a qualitative and case study method are explained. Additionally, this chapter describes and identifies the study's demographic, sample, research equipment, and data collecting techniques. Additionally, this chapter covers the data analysis process and the issues of reliability and validity as they pertain to the research. The chapter ends with a synopsis of the content covered in the chapter.

3.2 Research design

A research design is a road map for the gathering, measurement, and analysis of data that is informed by the study's research questions. Numerous qualitative research designs are applicable to research endeavours, depending on the study's methodology (Creswell and Creswell, 2017:12). Qualitative research designs use techniques that are as methodical as quantitative research designs, but they place a premium on data collection on naturally occurring occurrences. Most of the material collected is verbal, and the researcher must seek and investigate using a variety of techniques until a comprehensive comprehension is obtained. Qualitative research designs may be classified according to their emphasis on individual lived experience by use of case studies,

exploratory studies, and qualitative studies (Creswell and Poth, 2016:28). To this research study, a qualitative research design was used.

3.2.1 Exploratory research design

When there are few or no previous studies to use as a reference for predicting a result, an exploratory research design is used, and when there are few or no prior studies to use as a reference for predicting an outcome, a descriptive research design is used. Additionally, exploratory inquiries are necessary when the researcher must get a comprehensive understanding of the subject to create new knowledge frameworks via the introduction of theories and key conceptual frameworks (Creswell and Creswell, 2017:33).

3.2.2 Descriptive study

A descriptive study is often conducted to collect more information on a subject and to explain the features involved. This is a naturally occurring structure that often contains a series of expressed hypotheses or research questions (Vaismoradi et al., 2016:78). Additionally, descriptive investigations guarantee that variables are accurately and precisely captured (Creswell and Creswell, 2017). Descriptive studies seek to properly characterise events via the use of a range of data collection techniques (Creswell and Poth, 2016:78).

3.3 Research approach

After identifying the possible methods for a research study, it is critical to explain which strategy was determined to be the best for this investigation. The exploratory research method was determined to be most appropriate for the present study, with the researcher attempting to comprehend the phenomena of the research topic.

In the area of logistics and supply chain, the case study approach to academic research is a widely recognised research method. According to a study performed by Rutberg and Bouikidis (2018:209), the case study method was the most often used research strategy between 1970 and 1979, when 532 journal articles were examined. Harrison, Birks, Franklin, and Mills (2017:96) report that from 1977 to 1985, the case study was the most often employed research technique (25.4 percent) among 636 articles assessed from journals devoted to or concerned with information systems. In the interpretative tradition, case studies are the primary means of doing research (Silverman, 2020:55) the case study method has been suggested to be especially advantageous for

practice-based issues in which the actors' experience is essential and the environment of action is critical.

3.3.1 Phenomenological (qualitative) research

By contrast, phenomenological researchers think that the world is socially constructed, that science is driven by human goals, and that the researcher, as a subjective person, is an essential part of the observed reality (Silverman, 2020:55). The benefits of this qualitative, interpretative method to research include that the results are often more legitimate and less artificial, since the process of seeing events in realistic, real-world situations frequently allows researchers to acquire a more accurate understanding of those phenomena. Qualitative research often demonstrates a breadth of understanding and an abundance of information (Kalu Bwalya, 2017:56). However, phenomenological research is sometimes undermined by the researcher's subjectivity and the findings' poor dependability, such that two researchers may reach opposite conclusions based on their concurrent observations of the same occurrences (Kalu and Bwalya, 2017:43). The approach of the study included interpretivism (interpretivist) research philosophy.

3.3.2 Mixed method research approach

A mixed methods study is defined as the incorporation of quantitative and qualitative techniques in a single investigation. The word "research" refers to the process through which a researcher collects and analyses data, integrates results, and constructs webs using both qualitative and quantitative methods and processes during a particular study or program of inquiry. Norris (2017:58) This study makes use of the subjectivity inherent in a qualitative viewpoint to include new information into the collected data.

3.3.3 Qualitative research approach

Qualitative research focuses on the social dimension of science. Based on the qualitative methodology, the researcher employs open-ended questions and semi-structured interviews with participants. Interviews are often conducted in the natural surroundings of the participant or in a calm location, such as a conference room (Collins and Stockton, 2018:17). Qualitative research is often used when an issue is poorly understood and there is an inherent desire to fully investigate the situation. In qualitative research, a rich narrative is often produced through participant interviews and then evaluated to address the research topic. Numerous inquiries will be used to get information about the issue and to thoroughly address it (Rutberg and Bouikidis, 2018:209-213).

Qualitative research approaches may include a variety of data collection techniques to get a deeper knowledge of the subject, including interviews and observations (Rutberg and Bouikidis, 2018:213). Additionally, qualitative research is flexible and adapts to new information as it is collected, provides a holistic perspective of the topic, and allows the researcher to immerse himself or herself in the inquiry. The researcher acts as the instrument of research, and data are constantly analysed to establish the study's start date. The decision to employ a qualitative methodology necessitates several considerations, extensive planning (such as the most appropriate research design for the study, the amount of time required to complete the study, a data collection plan, and the resources available to collect data), and finally, self-reflection on any personal preconceptions or biases toward the topic design (Collins and Stockton, 2018:17). Selecting a sample group in qualitative research begins with identifying who is qualified to participate based on the study subject. The participant must have been exposed to or have personal knowledge of the investigated topic. A thorough interview will elicit information about the participant's interactions with the research subject or incident. Almost likely, a few general questions will be asked of all participants, as well as follow-up questions based on the participant's experience/answers. Therefore, sample sizes are often small, but there is a great quantity of narrative data to analyse and assess to uncover important trends (Norris 2017:58).

3.4 Sampling Design

Sampling is the systematic selection of a subset from a larger set with the goal of studying certain patterns and/or behaviours in that representation to reach a conclusion. (Alvi, 2016:19). Probability and irrationality are two of the most general types of sampling. Due to the qualitative character of this research, a non-probability sampling technique was used. Probability sampling is a technique for selecting units in which each unit has an equal chance of being chosen (Collins and Stockton, 2018:17). Probability sampling may be classified further into four types. Simple random sampling, systematic random sampling, stratified random sampling, cluster sampling, and multistage sampling are all examples of simple random sampling (Rahi, 2017:1). Due to the qualitative character of this research, a non-probability sampling technique was used. When randomization is not feasible, convenience sampling is used. This is a biased technique that encompasses convenience, purposeful, snowball, modal, expert, diversity, and proportional methods (Bryman, 2016:46). This study used both convenience and purposive sampling, which allows for easy access to respondents based on the researcher's requirements and judgment to accomplish the researcher's

objective. Respondents' answers were gathered via interviews. Non-probability sampling is described as a sampling strategy in which components of the population have no known or present likelihood of being chosen as sample subjects (Etikan et al., 2016:4). Non-probability sampling techniques include convenience, quota, purposive, snowball, aberrant case, sequential, theoretical, and adaptive sampling.

3.5 Target Population

In the context of research, a population is often characterised as a totality from which representative components will be selected. These subsets will then be utilised to investigate, with the conclusions drawn representing the position of the larger set. Creswell (2017:9) defined a population as the whole collection of items or persons of a certain kind that are being studied, the entire set of instances from which a sample is drawn. The research was conducted at the Sonwabo logistics KwaZulu-Natal warehouse, with 54 workers serving as the target population. This group of individuals comprises the risk manager, risk representatives, and operational staff. Sampling frame is a term that refers to a frame within which a sample of the target population may be drawn. As mentioned in this entry, writers such as Creswell (2017) and Clarke (2018) describe a sample frame as a listing of all population units from which a research sample will be selected.

3.6 Sample Size

The purposive and convenience sampling eventually provided fourteen targeted employees with expert knowledge of the subject matter (Human resources, inbound and outbound, risk management and operations control). Fourteen Sonwabo logistics employees were used as a sample size for the qualitative part of the study. The sample size was calculated to be representative of DC safety officers and warehouse workers. Natural resource scarcity, which includes factors such as financial limitations, time constraints, and accessibility, often makes it difficult for researchers to collect necessary data from the whole population. As a result, research should be capable of collecting data from a representative sample of the broader group population (Gruijters and Peters, 2020:16).

Table 3.1: Sample size

Job title	No. of interviews
Human Resources	1
Inbound/receiving	4
Outbound/Dispatch	3
Payroll	1
Risk management	2
Operations control	3

Source: Researcher's compilation

Members were interviewed individually by sending them emails of interview questions, followed by a phone call to ensure they acknowledged the receipt of the interview questions and make an appointment with each participant. As part of this research study, eleven interviews were conducted with members who includes the risk staff, human resources personnel and operational staff as indicated above. One interviewee was from the human resources officer, four from the Inbound/receiving section, three from the dispatch unit, one from payroll office, two risk managers and three were operational staff. The primary aim of the interviews was to get an understanding of the participants' experiences and perspectives on the safety practises in warehouse operations and also identifying factors inhibiting the effective workplace safety practises in warehouse operations. The research used non-probability sampling, often known as purposive sampling. This enabled the researcher to interview informed individuals.

3.7 Collecting data

Data collection is the systematic collecting and analysis of data from several sources in order to get an accurate and complete picture of a subject (Bilsborrow, 2016:156). Interviews will be used to collect data for the study. A conversation between the interviewer and the interviewee with the objective of extracting information is referred to as an interview (Makady et al., 2017:865).

Interviews offer several advantages, including the ability to elicit comprehensive information on ideas, attitudes, and personal sentiments, the ability to ask more thorough questions, a high response rate, and the ability to explain ambiguities. Interviews are objective and cannot be swayed by other members of the group (Makady et al., 2017:858). There are several types of interviews:

semi-structured interviews with open-ended questions, structured interviews that are standardised and ask the same questions to all respondents, unstructured interviews that are more flexible, and non-directed as well as non-directive interviews that have no predetermined topic to pursue (Bilsborrow, 2016:109).

3.7.1 Data quality control

Data quality control was ensured by detecting mandatory information that may have been missing, ensuring no errors are made during the transfer of data, removing duplicated and remaining outliers. Data quality control was also ensured by selecting the correct stakeholders to partake in this study and ensuring accuracy of the data given by these subjects.

Credibility: This variable is concerned with ensuring that the research accurately measures or tests the ideas for which it was intended. Several of the issues addressed assess the results' consistency with reality (Serret, Deguines, Jang, Lois and Julliard, 2019:22). The emphasis is therefore on ensuring that all techniques utilised to conduct the research maintain the data's quality and that it is a genuine depiction of the topic under investigation. The research study's credibility was emphasised throughout the in-depth interview sessions and the documentary investigation procedure.

Dependability: If comparable methods are used in the same context and under the same circumstances, similar results will be obtained (Alaoui and Gahi, 2019:810). The researcher must be able to articulate the many stages necessary to establish the study's and techniques' reliability, and the procedures should be detailed enough for other researchers to replicate them in comparable studies.

Transferability: This variable determines whether the findings of the study may be applied to other pertinent studies. Transferability has been identified as a difficulty in qualitative research since the findings of a qualitative inquiry are context-specific; therefore, proving their application to other settings may be difficult (Alaoui, Gahi, 2019:803). It is essential for the research goals that the results and data from this study be transferable to other warehouses and distribution hubs.

3.8 Data Analysis

The analysis of qualitative data includes categorising, recognising, and classifying the data's themes and patterns (Kenny et al., 2020:59). The term "data analysis" refers to the process by which the researcher organises both primary and secondary data gathered over the course of the study. Qualitative data analysis is a method for collecting, combining, coding, segmenting, organizing, and creating patterns from unstructured data (Appelman and Sundar, 2016:79). The aim of data analysis in qualitative research is to get an understanding of the participants' experiences and perspectives and to provide a response to the research question. The data analysis technique used should ensure that the study's goals are fulfilled. Typically, data analysis includes the creation of summaries, the reduction of gathered data to a manageable size, the identification of patterns, and the use of statistical methods (Cook et al., 2016:1369). Thematic data analysis will be performed to discover and extract data themes and patterns. Thematic data analysis is a qualitative research method that is mostly utilised in qualitative research projects (Johnson et al., 2017:22). The method divides data into several categories based on its relevance to the topic under study.

To achieve this aim, the interview schedule was structured into four core areas directly aligned to the study's research objectives:

- Safety practises in warehouse operations.
- Factors inhibiting the effective workplace safety practises in warehouse operations.
- Understanding the safety legislative section, standard operating procedures, and housekeeping strategy.
- Understanding warehouse mechanisation and automation operations.

Each subject area had a number of questions related to it, with the interviewer prompting interviewees with focused questions that fostered open dialogues. Interviews lasted an hour and were planned for thirty minutes to an hour depending on interviewer availability. All of the interviewees responded to all of the questions. Per focus area and topic, a thematic content analysis was undertaken to allow the researcher to seek for and identify common and repeating themes in the data.

3.8.1 A Six-Phase approach to Thematic Analysis (Braun and Clarke, 2016:77-101)

Phase 1: Familiarising with the gathered data

This step requires the researcher to immerse himself or herself fully and actively in the data by first transcribing the interactions and then reading (and re-reading) the transcripts and/or listening to the recordings. Concepts should be written first. It is essential for the researcher to have a firm grip on the substance of the interaction and to be familiar with all aspects of the data. This step lays the foundation for further analyses.

Phase 2: Generating initial codes.

Once the researcher is acquainted with the data, he or she must begin finding preliminary codes that are characteristics of the data that seem to be intriguing and relevant. Such codes are more numerous and precise than themes, yet they serve as a guide to the conversation's context.

Phase 3: Searching for themes

The next stage in the procedure is to begin analysing the collected codes interpretively. Relevant data extracts are categorised (mixed or divided) into broad themes. The researcher's reasoning should refer to the connection between codes, subthemes, and themes.

Phase 4: Theme review

Following that, a more in-depth examination of the discovered themes occurs, during which the researcher must decide whether to integrate, improve, separate, or reject the original themes. The data inside themes should make sense, but there should be obvious and discernible differences between them. This is often accomplished in two phases: first, the themes must be validated in connection to the coded extracts (phase 1), and then the entire data set must be validated (Phase 2). This phase results in the creation of a thematic map.

Phase 5: Theme definition and naming

This phase entails 'refining and defining' the data's themes and possible subthemes. Continued study is necessary to strengthen the highlighted themes. The researcher must offer topic names and short working descriptions that concisely and succinctly convey the core of each subject. At this stage, a coherent narrative about the facts must emerge from the themes.

Phase 6: Report production

Finally, the researcher must transform his or her analysis into a comprehensible piece of writing by adding vivid and interesting exact examples that relate to the study subjects, research problem, and material. The report's findings must persuade the reader of the report's usefulness and validity. It must go beyond a straightforward exposition of the themes to include an evaluation based on real data that directly addresses the research question.

3.9 Elimination of Bias

Bias can occur in the planning, data collection, analysis, and publication phases of research (Arttachariya, 2015). The authors further highlight that understanding research bias allows research undertakings to critically and independently review the proceedings and avoid treatments which are suboptimal or potentially harmful. To ensure elimination of bias and constant objectivity throughout the study, the researcher kept focus on:

- **Non-use of gender aligned words**

Gender-neutral language is a form of linguistic prescriptivism that aims to eliminate (or neutralise) reference to gender in terms that describe people (Williams et al., 2012). The research maintained non-use of gender-specific job titles and any other terms which would expose the gender of research participants. In addition, gender-neutral pronouns for either female or male participants were used to remove the alleged subconscious effects of language in reinforcing gender and gender stereotypes.

- **Avoidance of identifying people by race or ethnic group**

McCulloch (2004) argues that the more central a given identity is to one's self-definition, the more an individual should be motivated to maintain and enhance the identity. In fact, social identity theory argues that individuals are driven to maintain and enhance collective self-esteem just as in personal self-esteem. In turn, people's valued social identities are important sources of self-esteem (Arttachariya, 2015). To avoid the inferiority or superiority of ethnicity and race, language identifying people on this background was avoided throughout this study;

- **Refraining from language that suggests evaluation or reinforces stereotypes**

The nature of prejudice has developed a systematic and more nuanced analysis of bias and its associated phenomena. According to McCulloch (2004), interest in prejudice, stereotyping, and discrimination is currently shared by allied disciplines such as sociology and political science, and

disciplines such as health and commerce. To address this challenge, the study avoided use of language that suggests evaluation or reinforces stereotypes; and

- **Abstinence from making assumptions about various age groups**

Assumptions about age groups might prejudice what could be relevant information for any good research. To avoid the assumption about various age groups, the survey instrument ranged from the minimum legal age of employment (18 years) to as high as beyond the pensionable age of sixty years.

3.10 Ethical considerations

Ensuring participants have given information consent: The term "informed consent" refers to the important importance of informing participants about the study project's nature. Only if participants in the study have a thorough understanding of the study's aim and the extent to which they are being requested to participate in the research endeavour can they give informed consent. To achieve this goal, the researcher educated respondents about the type of activity and the topics that the study planned to cover. In addition, the researcher informed participants that they might resign from the study at any time without incurring any penalties.

Ensuring no harm comes to participants: Researchers should take precautions to ensure that study participants are not harmed. Formal authorization from the relevant warehouse was asked and delivered to ensure that no participant was held liable for his or her thoughts.

Ensuring confidentiality and anonymity: The researcher must ensure that the identity of all participants is protected. To protect participants' anonymity, the researcher will restrict access to raw data by securely storing all data, presenting results in a way that makes it difficult to identify people, and obtaining authorization for future data use. Additionally, the findings of this study will be compiled to reflect the collective viewpoints of all participants, with acronyms used to safeguard identity."

Ensuring that permission is obtained: It's critical to go through the proper processes by formally requesting authorization to do research. The ability to reach out to respondents is crucial to the study's success. To resolve this, the UKZN Research Committee's ethical approval was requested, as well as a gatekeeper's letter from the organization's head office's warehouse management.

3.10 Conclusion

Safety is a vital component of every company, and it must get the attention it deserves to ensure the success of the business. Every business should make a concerted effort to enhance its safety performance on a continual basis. To attain safety excellence, innovative methods must be integrated into established safety management procedures. Safety in the workplace is a wide subject that requires examination alongside corporate culture, Leadership styles, staff attitudes and behaviours, as well as interaction and productivity management systems, are all factors to consider. According to this research, culture influences behaviour; therefore, it is important to create an acceptable culture inside the organisation, which will eventually align employee attitudes and practises with SHE goals. Due to the difficulty of directly quantifying some aspects of safety, such as attitude, it is important to have systems in place that can measure employee safety performance and organisational safety overall. The study lays the foundation for future studies into safety

CHAPTER FOUR:

DATA PRESENTATION

4.1 Introduction

Warehouse operations are inextricably linked to safety measures. Warehouse safety is all about always protecting the safety of workers. This is achieved by making sure that protective gear, referred to as Personal Protective Equipment (PPE), is always worn, by eliminating all potential hazards such as trips and falls, by labelling danger zones, by always using safe lifting techniques, by providing training, and by promoting safety awareness throughout the warehouse. (Lutchman et al., 2019:99). As stated in the OSHA statute, safety procedures are in place to protect the safety of warehouse workers. However, accidents continue to occur. The purpose of this research is therefore to investigate/determine the variables that impede safe warehouse and/or distribution centre operations.

The warehouse personnel were questioned by the department, including risk, softs, returns, dispatch, assets, and assembly. The researcher analysed the data in a methodical manner, beginning with the interview questions and concluding with answers from various departments. Individual answers from the interview data are discussed, however the discussion is restricted to references from the literature study to support the responses provided. The debate is followed by the results from the interviewees' answers, which attempt to summarize the overall findings from the data gathered.

4.1.1 Research objectives of the study

The research objectives presented in Chapter 1 were as follows:

- a) To identify safety practises in retail warehousing operations
- b) To identify factors inhibiting the effective workplace safety practises in warehouse operations
- c) To examine whether the safety legislative section, standard operating procedures, and housekeeping strategy influence warehouse safety level
- d) To determine the extent of warehouse mechanisation and automation to influence employee safety for materials handling and ergonomics.

Chapter two reviewed the relevant literature regarding factors inhibiting safety practises in the workplace, outlining the OHSa in the workplace. Chapter 3 described the study strategy and methods used to collect and analyse all the data in this chapter. This chapter will provide an in-depth analysis of data to accomplish the study goals, using all data gathered during the researcher's in-depth interviews.

4.2 Saturation

Saturation has been accepted as a methodological principle in qualitative research such that it indicates the need not to further collect or analyse data (Terry et al., 2017:35). Therefore, this study reached the point of saturation such that the available resources were used and could not attain more.

4.3 Biographical Data and Organisational Profile

The biographical and organisational data of the sample includes the rank in the organisation, gender, length of service in the organisation and the departments in which the respondents fall into.

4.4 Thematic analysis

Primary data were gathered via in-depth interviews. Nvivo software version 12 was used to perform thematic analysis. These diagrams are included in the appendixes. The study's issue statement, as well as its goals and objectives, influenced the kind and format of the data gathered. Individual interviews were conducted with a total of 14 participants. A thematic analysis is a method for evaluating qualitative data to assist in its interpretation. Qualitative research requires a knowledge of how different views and facts are gathered. Thematic analysis allows the researcher to identify themes that contribute to the study's interpretations being accurate. (Terry et al., 2017:37).

4.4.1 The process of categorizing

Table 4.1: Analysis of themes

Themes	Sub-themes
Warehouse mechanisation and automation	Mechanisation purpose
Effective workplace safety practises	Safety systems on employee performance

Technological application and Equipment maintenance	Machine and equipment maintenance
Safety practises and Identifying safety practises	Health and safety training Safety practises implementation, housekeeping practises

Source: Researchers Compilation

4.4.2 Themes

Theme 1:

Warehouse mechanisation and automation and technological application and Equipment maintenance

Mechanisation and automation are one of the main methods of improving employee efficiency. Warehouse operations are closely linked to the mechanisation of labour and using automations to improve operational performance (Sabchuk, 2019:307).

Warehouse management systems have evolved so much in the past years that they have made many warehouse operations to be effective for people to perform and have generated efficiencies to reduce labour-intensiveness such as paperwork and data entry, picking efficiency and task interleaving. More advanced solutions reduce data entry allowing employees to focus on more productive functions (Sharma et al., 2020:10).

The extent to which the warehouse mechanisation and automation influence employee safety for materials handling and ergonomics is discussed below.

Person 3 who is thereafter referred to as P3 said, *“there is no safety in the warehouse because employees do not have helmets to prevent them from falling objects and that they require noise barriers, however these are not feasible for this department because one would not be able to hear moving equipment. Most employees do not know or understand the importance of safety processes such as using the demarcated areas for walking and some of the employees do not care about safety procedures if they get to work and be paid at the end of the month therefore the prevalent workplace injuries.”*

Person 7 thereafter referred to as P7 stated, *“people do not follow the right channels, they do not use their PPE accordingly and when injured, and they claim to have used it.”* Another challenge stated by the respondents is that *“long term use of the machinery results in backache and kidney problems. The department of health and safety does not come often to assess the site, the employees are not aware of the safety processes to follow, and they are more negligent than they would be if the assessments were done more often. People do not want to investigate incidents, so managers are forced to discipline people for not complying with safety practises.”*

Noncompliance with the safety rules is one of the challenges that the department and/or company is faced with when it comes to safety. Safety signs are not adequate, and the quality of safety boots is somewhat in question, as well the period for getting new ones is very long.

“Defiance by the employees and management does not always comply with the processes such as when there is an increase in volumes, department controllers allow the employees to operate the machinery with expired licenses. The employees on the other hand take advantage of non-compliance in the absence of controllers and some of them do not use the full PPE such as not wearing the jeans that are provided by the company.”

On this theme Person 1 who is thereafter referred to as P1 stated, *“Machine drivers are too fast, or they are speeding when driving the machinery around the warehouse and this leads to more injuries occurring in the warehouse. Most employees do not follow the rules and when injured, the company is required to pay Injury on Duty (IOD) funds to the injured employee. The environment is well maintained because there is a contractor on site, however there are not enough people or authorities who come to assess and analyse the safety practises on site from the department of health and safety.”* Safety has a significant effect on the company; we do not appreciate the value of safety until something goes wrong, according to one responder. Without safety measures, no business can survive. Safety measures provide a safe working environment and minimize the company's insurance review. It saves the organisation money since there are no lump sums payable to injured staff and the organisation has its staff complimented in full always.

“Safety practises have a positive impact in the organisation because there is zero tolerance to injuries on duty. The safety of the employees is prioritised and the compliance with the safety act is ensured. Employees get incentives for complying with safety processes and this encourages them to be compliant.”

Person 5 thereafter referred to as P5 presented that there is a company doing mechanisation and automation by stating, *“Yes, there is a company called Goscor that takes the equipment for servicing which is done at least once a year, and the change of batteries is done daily. The machinery is checked every day before usage. All machinery is maintained for moving stock from point A to point B, not for the safety of employees because half of the machinery the hoots are not working. Startup checks and close checks are not done before and after to ensure that the machinery is in a good working condition. The equipment is maintained. There are maintenance companies on site who attend to servicing and repairing the machines.*

Every six months the machines are booked for a service to prevent breakdowns. The workshop does the maintenance of the machinery monthly with an outsourced company called Goscor. The service records for each machinery are kept at the workshop for future references. Departmental controllers have an access card that they use to activate a machine after it stops when it has had an accident. The usage of this card alerts the workshop that a certain machine has been in an accident in the warehouse”.

This shows that the company adheres to the maintenance standards of the machinery and equipment however the responsibility lies with the machine operators to handle and use them correctly.

Theme 2:

Effective workplace safety practises

Safety procedures are often disregarded in workplaces due to inadequate resources, ignorance, cost cutting and time constraints. However, when these are correctly implemented, they bear major benefits for the company such as employee satisfaction and improved/increased productivity. This is done by reducing the risk of injury, workplace disruptions and absenteeism associated with workplace injuries (Hofstra et al., 2018:134).

What are the safety practises in retail warehousing operations and what are the factors that inhibit effective workplace safety in warehouse operations?

Person 2 who is thereafter referred to as P2 stated, *“The company added signage to make the employees better aware of safety precautions and there are more demarcated areas for the*

employees to walk on. There are strategic meetings and training done twice or three times a year such as the fire training. Strategic meetings for policy improvements and there is training from time to time aimed at reminding employees about the importance of safety. There is risk assessment, GV Chase is an incident tracking system in which every event is recorded. Meer Kart is another method that assesses the severity of events by examining what is wrong and devising new metrics. Annual risk audits are conducted by both internal and external auditing bodies. Inspectors from the Department of Labour come through for an audit which in most cases shows that the DC is doing well in terms of safety.”

Other respondents stated, “Little can be done to enhance their department's safety assessments since they are told about potential accidents and injuries, the procedure is considered fair. It is reasonable since it is for the safety of workers, indicating that the business values their lives and overall productivity.

A procedure cannot be considered fair if participants are required to be punished. When an employee drives a machine at a high rate of speed and knocks pallets without reporting it, they claim the system is unfair when reprimanded. When an employee's life, health, and safety are in risk, employers must take care of them. The assessments are not biased since they are performed by non-profit auditing organisations. The business is audited to ensure that its safety procedures are fair.

The procedures are transparent and equitable since all workers have an equal opportunity to make ideas and proposals for improving the assessment process, and management maintains an open-door policy.”

Person 4 who is thereafter referred to as P4 stated, *“The performance of employees is consistent as they are not interrupted by safety issues. However, there is a negative impact because when an employee is injured on duty and they must stay home, it is a no work no pay system that applies. Many injuries occur due to space constraints where an employee may be scratched by a passing machine on the aisles. When working in a clean environment, there are less injuries such as ensuring that there are no papers on the floor which could disrupt the moving machines. A clean floor prevents slips, trips, and falls and 30min is used daily for housekeeping which could be used for other productive activities.*

Employees who value safety procedures are those who have seen them in action. The OHSA legislation says that it is the employer's responsibility to enforce safety procedures, which means that the employer must ensure that safety standards are followed and punish workers as necessary. Processes enhance staff performance while taking employee health and fitness into account. Employees work freely, knowing that no circumstance in their work environment poses a danger to their lives, and they move freely along aisles.”

Overall, employee perspective on safety practises is negative, employees wait for the accident to happen before they can act so they are reactive instead of being proactive. Some of the employees are afraid of the red tape, they are scared to report unsafe practises by fellow employees because that may lead to penalization for the defaulting employee (s). Due to the warehouse being a high-risk environment, employers understand the need for the safety policies and why they need to adhere to them. The DCs policy is working but it can always be improved.

Some of the employees have a negative perception because “management does not want them to take shortcuts” others have a positive perception towards the policy because they realise that the company cares about their safety.”

Theme 3:

Housekeeping safety level

In response to this question, P7 and Person 8 said, *“housekeeping activities that are done include making pallets straight, removing shrink wraps from the floor, taking stock out from the cupboards, ensuring there is no double-stacking of goods, cleaning the cupboards and a housekeeping meeting every day from 8am – 8:30am. They also stated that if using a paper or the printer, employees are encouraged to use paper bins to keep the floor clean. This process also includes picking empty boxes and placing them in order. Everyday 30min is allocated to housekeeping meetings and there is a private company on site called Servest that works 24/7 to clean the whole warehouse. There is also a recycling company that deals with recycling plastic and cupboards. Moreover, housekeeping is done as operations go on and there is no specific time to do it.*

Safety housekeeping and stacking where the company ensures that stock on racks and/or pallets is stacked correctly. Recycling also takes place where waste is sorted according to safety standards such as plastic on plastic bins, operational housekeeping and picking by layer. There are daily housekeeping sessions to attend to major housekeeping requirements. Then these requirements are then incorporated into the operational standard of operating practises. Normally, a 2-minute siren will ring to remind staff members of housekeeping time. Housekeeping where quality control is ensured by the housekeeping committee-which is a group of employees from different departments. This committee is allocated aisles to lead the employees who work there to ensure proper housekeeping. These teams follow certain criteria for housekeeping such as no picking steps, pallets must be straight, stock with inferior packaging must be taken out for salvaging and there must be no short dated or expired stock in the pick slots.”

Person 9 stated “Safety practises are implemented by ensuring that employees use safety boots, replace gloves after every three months, employees get training for firefighting and fire extinguishers are placed around the warehouse and checked frequently. Every department has a trained first aider to assist when the need arises. Employees are not allowed to enter the warehouse without safety boots and reflector vests if you are a visitor. There is signage on boards and some parts of the wall for safety precautions. All machine operators have relevant licenses and are well trained for safety processes when operating these machines.

Organogram for safety assessments is available and states what needs to be done and by whom. It has legal implications if not followed through and assesses producers that need to be followed. Legal requirements and compliance as per the department of labour is sought through. These procedures are based on hazard occurrence. Common practice is that all employees must wear the required PPE and employees that utilise machinery are required to conduct safety checks prior to starting the machines.

Safety practises are implemented by making sure that we all adhere to the company policy around safety. On a normal basis, employees go for medical check-ups and office chairs are replaced to prevent back pains. There are experts in safety and housekeeping who train others and the risk controller and safety representative in the assembly department conducts safety induction to the team members. The pickers and loaders are inducted on how to conduct machinery pre-start

checklists at the beginning of every shift to check if the machine is in a good working condition. These lists are then submitted to the workshop so that any faults can be fixed.”

P4 and P5 stated, “Some of the contributing factors to occupational injuries is the space within the aisles, it is too small for all employees to work on, only two employees can work in the same aisle at a time, but this is not the case. The aisles become congested because everyone is rushing for productivity so they can meet the targets. Another contributing factor is negligence, noise, and speeding machines around the warehouse. Some of the contributing factors is using earphones while working which means they cannot hear moving machinery. Cell phone usage while working is another contributing factor and not wearing the correct PPE on site.

Negligence causes accidents, some of the drivers drive at high speed. Leaving pallets at aisles and the driver trying to avoid it hits something then an accident happens. Rushing for productivity also results in injuries around the warehouse.

Some of the contributing factors to occupational injuries include the lack of focus, fatigue, and operational pressures. Fast moving machinery and wet floors. The employees not adhering to the health and safety standards, speeding or reckless driving and pickers not following the picking standards which results in back pains.”

Person 10 further stated, “The company offers first aid training to one employee in each department, machine operating training, the use of PPE and firefighting training should there be a fire outbreak at the DC. Each department has a trained safety representative, there are allocated places for employees to walk on called green areas. There are also designated smoking areas so the warehouse is protected from being burnt by burning cigarettes thrown anywhere and to avoid passive smoking which can cause health problems.

Samtrack is a company that does safety management training for safety representatives. There is also OSHA training as per section 8 of the constitution, general safety regulations which refer to compliance with safety acts to make sure that the employees are safe in their operations. Risk assessments are also done, as well as environmental surveys. Employees are internally trained for food handling. All staff are inducted upon arrival on site and when training is conducted on the specific job function, safety and housekeeping training is given. All new staff members go for an induction program about safety, first aid training and firefighting training.

There are safety representatives that are sent to National Occupational Safety Association (NOSA) for training with the intention of up skilling them. The warehouse quality controller also visits departmental green area meetings to educate employees about safety and housekeeping monthly.”

Warehouses and cross dock facilities can be very dangerous to work in with a lot of potential hazards and risks associated with working there therefore throughout the site there should be obvious signage's and implementations of safety practises to mitigate risk for the employees and everyone who encounters the facility.

4.5 Conclusion

According to the Occupational Health and Safety Act, the employer is responsible for providing a safe working environment for the employee. However, it is the employee's duty to take responsibility for their own health and safety by adhering to the DC's safety regulations.

The goal of warehouse safety is to reduce accidents to a minimum to maintain a constant level of staff productivity. This may be accomplished by defining the safety policy's goals and objectives, collecting benchmark resources, and forming your team to guarantee that safety is communicated effectively from top management to operational workers. When this is completed, a safety policy may be developed, and it should be reviewed on a regular basis to identify areas for improvement. (Hofsrt et al., 2018:148).

The frequency of incidents in warehouse operations demonstrates without a reasonable doubt that there is a clear need for action, as several workers said, "the drivers surrounding the warehouse speed:". If management and operational workers have an open line of communication, the safety department will be able to detect and address safety concerns in the warehouse.

The remarks on safety are pertinent to this research since accidents continue to occur despite the DC's best attempts to avoid them. According to operational workers' answers, safety rules seemed to be the primary concern for three of the five employees interviewed. This indicates that safety rules should continue to be informed and given the attention they merit.

The main results presented in this section indicate that there are significant safety concerns that need addressing. The chapter that follows is 5 which summarises the research, discusses and interprets the findings of the study.

CHAPTER FIVE:

DISCUSSION OF RESULTS AND RECOMMENDATIONS

5.1 Introduction

This is the final chapter which aims to conclude the study and provide recommendations. The purpose of this study was to find out which factors inhibit safety practises in warehouse operations. This was achieved through studying the OHS act and warehouse safety practises, implementation thereof, automation and mechanisation of the warehouse and the impact it has on employees and operational productivity. Based on the empirical findings this study makes a positive contribution towards future research and the school of MIG at UKZN Westville community on factors that inhibit safety practises in warehouse operations.

5.2 Conclusion based on literature review

Previous researchers have put an emphasis on the implementation of safety practices in warehouse operations as opposed to having them as merely wallpapers. The emphasis was heavily on how operations could be improved by implementing the OHS Act as the legal framework.

5.3 Conclusions based on empirical findings of the study

The results indicated that most respondents have worked for the business for more than ten years and that top management is not as exposed to accidents as operational workers, which explains why they are inconsistent in their efforts to ensure employee safety.

Question 1:

What are the safety practices in retail warehouse operations?

Health and safety as well as safety practises in the workplace are an often-overlooked area which in turn costs the company more than it would to implement these practises. The OHSA looks at anticipating and preventing work hazards in the working environment (Xiaojun and Ken, 2020:13).

The findings of this research revealed that there are workplace safety practises in place:

Daily cleaning activities take place from 8:00 a.m. to 8:30 a.m., and all workers are required to attend. Housekeeping is responsible for maintaining a clean and safe working environment, and its standards are consistent with quality control and standard operating procedures. A contracted business is responsible for ensuring the cleanliness of the environment 24 hours a day, and NOSA

selects safety representatives from each department to attend safety training. The business offers firefighting training to workers in several departments, as well as first aid training to departmental representatives.

When new workers are hired, they get a safety orientation, while machine operators receive machine operating training. Risk evaluations and environmental surveys are conducted, as well as material handling training. What the research discovered is that workers are dissatisfied with the fact that only a few of them are educated in safety, including the proper use of personal protective equipment (PPE) and its replacement.

The business has hired safety representatives who are responsible for regularly inspecting fire extinguishers, ensuring machine operators have the necessary licensing, and doing pre-start inspections on equipment. Most participants learned about occupational safety measures via their daily interactions with warehouse operations. The results of this objective indicate the existence of safety measures in warehouse operations, although their consistency is lacking.

Effective housekeeping can help mitigate the risk of workplace hazards while poor housekeeping practises often contribute to incidents. Every business needs to understand that housekeeping is not just cleanliness but includes keeping work areas neat and in order, ensuring floors are free of slips and trip hazards. It also requires paying attention to important factors such as the warehouse layout, aisle marking, adequacy of storage facilities and maintenance. It becomes an ongoing operation to ensure effective and efficient operation that is hazard free (Richards, 2017:55). Adequate warehouse management helps prevent safety issues by ensuring employees are adequately trained on specific topics such as where the emergency equipment is found around the facility, how to use safety gear or PPE, eye washing stations and how to properly operate machinery and equipment that is used in the warehouse (Öztürkoğlu, 2018:218)

Question 2:

What are the factors that inhibit effective workplace safety in warehouse operations?

There are many reasons why safety in warehouses drops, this includes a low unemployment rate and lack of training are the biggest factors while other challenges may include workload and workflow changes which may be unsafe working conditions and human errors. However, proper training and highly qualified workers can reduce the number of injuries and fatalities (Inam, Fersman, Raizer, Souza Nascimento and Hata, 2018:202).

The following variables contribute to the total risks involved with warehouse operations:

Because there is zero tolerance for on-duty injuries, safety measures guarantee a safe working environment and need little insurance (IODs). Safety policies guarantee that workers' safety is prioritised, the organisation complies with applicable laws, and employees are rewarded for following safety protocols. One responder stated that we do not appreciate the value of safety until after the harm has been done. While adhering to safety regulations saves the business money by requiring only modest lump sum payments to injured workers, there are not enough government inspectors from the Department of Safety who visit to evaluate safety behaviour and trends in the DC.

There are many difficulties associated with the DC's safety protocols, including the fact that some workers are not completely aware of the safety procedures they are expected to follow, and individuals deny culpability until the CCTV video proves them guilty. Employees acquire health concerns over time, such as back discomfort and renal issues. Inadequate signage, inconsistent quality of PPE such as safety shoes, a lengthy renewal period, and people's unwillingness to examine issues all contribute to managers being compelled to punish employees for noncompliance.

Suggestions include taking harsh disciplinary action against defaulters, improving process flow, and implementing compliance training for the whole staff. Additionally, the organisation's health and safety culture must be changed; additional workspace, additional equipment, and more visible signs are required to reduce the time between PPE renewals. Additional safety programs will improve the issue, as will the use of films during safety inductions and presentations. The OHSA department's involvement is critical to ensuring the proper operation of safety procedures. External vendors must also adhere to safety rules since they often do not wear the proper PPE. When it comes to risk and safety regulations, consistency is critical.

Numerous gaps exist in the existing system, including safety audits, management involvement to up skill workers to execute safety procedures, enforcing punishment, providing appropriate PPE, clearly delineating roles and duties, and inconsistent internal communication. Warehouse

operations are hugely dependent on manual/labour intensive work therefore the human element plays a critical role. For the warehouse to have excellent performance, it is important to pay attention to human needs to help minimise risk (Inam et al., 2018:201).

Question 3:

To what extent do the safety legislative provisions, standard operating procedures, and housekeeping strategies influence warehouse safety level?

The OHSA makes it the responsibility of the employer to assess the risk to the health and safety of the employees and act upon risks that are identified, appoint health and safety representatives, and provide employees with information and training on occupational health and safety as well as written health and safety policy (Sugiono et al., 2020:268).

The following variables found to be significant in determining the degree to which employee safety affects warehouse operations:

According to one participant, workers who value safety are those who have seen how it benefits them and how procedures enhance employee performance while taking employee health and safety into account. According to the OHSA, it is the employer's responsibility to enforce safety standards and to punish employees when necessary. When workers operate in a clean workplace, fewer injuries occur, and employees may work freely knowing that no circumstance in their work environment poses a danger to their life. However, some respondents said that there is little room inside the aisles, posing many hazards for them, and that if they are injured on the job, they are required to remain home on a no work, no pay basis.

The business is audited to ensure that its procedures are fair, and the assessments are objective since they are done by auditing organisations that are not compensated for the work, and workers are informed about the DC's safety policy and any safety issues that may occur. The procedures are fair since they are designed to ensure employee safety, demonstrating that the business cares about its workers' health and safety, as well as their productivity. Employees are given an equal opportunity to make ideas and recommendations for enhancing the evaluation process. Additionally, respondents said that although a procedure cannot be fair if someone requires punishment, companies must ensure that workers' lives, health, and safety are protected.

All participants agreed that operating equipment at excessive speeds and irresponsible driving are significant contributors to occupational injuries. Negligence was the second most common reason; for example, workers do not adhere to safety regulations, and pickers do not follow proper picking instructions, which results in back problems, mobile phone use, and earphone use while operating a machine, among other things. Additionally, damp flooring, falling items, slips, trips, falls, and noise, workers hurrying to complete an order to earn additional rewards, loss of concentration, tiredness, and operational demands all contribute to this risk.

The amount of workplace injuries that take place in warehouses are crucial to be overcome. Emphasis of OSHA in the workplace is on the critical strategies that must be implemented in the workplace. Furthermore, the design of the workplace should aim to get the right technology and design to meet the requirements. The level of technology used should be factored into the operational design, whether basic or robotic to have an effective communication and information system (Sugiono et al., 2020:268).

Question 4:

To what extent do the warehouse mechanisation and automation influence employee safety for materials handling and ergonomics?

Warehousing forms a crucial part of logistics and supply chain operations. A warehouse houses stock for the business's planned space usage for storage and material handling process. The process of upstream all the way to the downstream supply chain shows that storage takes place at various stages from production to distribution. Therefore, warehouse efficiencies should be improved through some form of technological application and automation to bring it to such a level (Kumar et al., 2021:23).

The following variables indicate the degree to which an employee's work environment affects their safety:

Based on the study findings, the warehouse's equipment is serviced biannually, which operational workers believe is insufficient since these devices often break down, presenting additional risks to them and interfering with their total efficiency. However, batteries in the equipment are replaced daily for recharging, which is insufficient if the gear is not maintained correctly and on a regular basis. Inadequate maintenance of equipment is apparent in machinery with malfunctioning hooters.

Certain workers fail to do pre-start and shut-down inspections to verify the equipment is in excellent operating order. The workers believe that the equipment is maintained only to transport items from point A to point B and not for the operator's safety.

According to the participants, workers have varying perceptions of the DC's safety policy because they wait until an accident occurs before reporting hazardous behaviour. Most workers are unaware of or unconcerned about the significance of safety procedures, and they are unconcerned whether they work and get compensated. This is due to their dread of red tape, which causes them to be reactive rather than proactive. According to several workers, the warehouse lacks safety due to an insufficient supply of personal protective equipment (such as helmets and noise reduction objects). However, most workers realise that the environment in which they operate is hazardous and that they must adhere to safety protocols. Internal and external auditing agencies perform annual risk assessments, and strategy meetings and/or training are held twice or three times a year to remind workers of the critical nature of safety. Additionally, the workshop performs random inspections at any time of day or night. Risk assessments are conducted, and an incident tracking system called GV Chase is used to record all incidents. Meer kart is a method that is used to determine the severity of events and, as a result, to take appropriate action.

Warehousing and material handling systems have experienced a huge technological integration into their operations however not all spheres of this industry have benefited from the technological advancements. Emerging economies mostly use the manual approach in implementing warehouse and material handling tasks. This suggests that there have not been all levels of technological integration into warehousing and material handling (Kumar et al., 2021:23).

5.4 Contributions of the study

Enhancing employee safety in a warehouse via housekeeping increases staff productivity Freitas et al. (2019:1084)'s research, Yoon (2019) and Ali et al. (2020:8) further elaborate on their literature the importance of warehouse health and safety practice. The inbound and outbound operations also play a vital role in ensuring that customers (retailers and wholesalers) are satisfied. Customer satisfaction results in a smooth operation of the whole supply chain.

5.5 Recommendations of the study

Recommendations on improving overall safety practises and eliminate warehouse injuries are as follows:

- Train all staff members, evaluate and certify all forklift operators on safety rules and principles.
- Conduct daily trip inspection reports using a pre-inspection checklist, covering areas such as hydraulic lifts, tires, brake lights, possible leakage and carbon monoxide emissions.
- Ensure that faulty machinery is red tagged by a supervisor and pulled from use. Also the management should ensure that the operators wears a seatbelt installed by the manufacturer.
- Follow safe procedures for handling and stacking loads and keeping loads within the forklift's weight capacity.
- Maintain low speeds, especially in congested or slippery areas and maintain sufficiently safe clearances for aisles, loading docks or passages where forklifts are used.

5.6 Limitations and delimitations of the study

More time should be given to the study as it was difficult to access participants during Covid-19 related challenges, full cooperation to the study not given by participants as they did not give answers to all the questions posed to them and difficulty to the accessibility of the population as interviews had to be done electronically due to Covid-19 limitations. This research interviewed representatives from risk, incoming and outgoing, human resources, and operations control at a warehouse, the problem statement is deliberate, as there are other common problems that might have been selected but were hidden from view. The selection of goals, as well as the theory chosen, is another delimitation.

5.7 Conclusions

This chapter outlined the conclusions and recommendations obtained from the findings of the study. The research's goals were established, and the data gathered has been analysed. It was determined that safety concerns remain widespread in the warehouse, rules must be updated, and the organisation's whole safety culture must be altered. The study's results indicate that carelessness continues to be a significant issue in the warehouse. According to employee answers, although safety rules are enforced, their ultimate objective of ensuring the safety of all warehouse workers has not been completely realised. Inadequate policy implementation may be a result of negligence or a reluctance to comply. Without the assistance and involvement of workers, policies cannot be effectively executed. In summary, there is strong evidence that improvement on safety

practises is still needed through effective training implementation, monitoring and evaluation so that workplace injuries can be minimised.

REFERENCES

- Alvi, M., 2016. A manual for selecting sampling techniques in research.
- Appelman, A. and Sundar, S.S., 2016. Measuring message credibility: Construction and validation of an exclusive scale. *Journalism and Mass Communication Quarterly*, 93(1), 59-79.
- Bahari, F.A., Azman, M.N.A., Mohd Nawi, M.N., Ayub, A.R. and Habidin, N.F., 2017. Supply chain management: manufacturing in blockwork system. *International Journal of Supply Chain Management (IJSCM)*, 6(2), 229-234.
- Bilsborrow, R.E., 2016. Concepts, definitions and data collection approaches. In *International handbook of migration and population distribution*, 109-156. Springer, Dordrecht.
- Bridgestone Logistics., 2017. The Effectiveness of Warehousing in the Supply Chain Process. Available at: <https://www.bridgewaterlogistics.co.za/the-effectiveness-of-warehousing-in-the-supply-chain-process/>. Accessed 28 April 2017.
- Bryman, A., 2016. Oxford university press. *Social research methods*.
- Carmichael, F., Fenton, S., Pinilla-Roncancio, M., Sing, M. and Sadhra, S., 2016, Workplace health and wellbeing in construction and retail: Sector specific issues and barriers to resolving them, *International Journal of Workplace Health Management*, 9(2), 251-268. <https://doi.org/10.1108/IJWHM-08-2015-0053>
- Caudell, D. 2018 Warehousing 101: An introduction to warehouse automation, Available at <https://www.rfgen.com/blog/warehousing-101-an-introduction-to-warehouse-automation/>
- Chang, H., 2016. Routledge. *Autoethnography as method I*
- Chofreh, A.G., Goni, F.A. and Klemeš, J.J., 2017. Development of a roadmap for Sustainable Enterprise Resource Planning systems implementation (part II). *Journal of cleaner production*, 166, 425-437.
- Collins, C.S. and Stockton, C.M., 2018. The central role of theory in qualitative research. *International Journal of Qualitative Methods*, 17(1), p.1609406918797475

- Cook, D.A., Kuper, A., Hatala, R. and Ginsburg, S., 2016. When assessment data are words: validity evidence for qualitative educational assessments. *Academic Medicine*, 91(10), 1359-1369.
- Creswell, J.W. and Creswell, J.D., 2017. *Research design: Qualitative, quantitative, and mixed methods approaches*. Sage publications.
- El Alaoui, I. and Gahi, Y., 2019. The Impact of Big Data Quality on Sentiment Analysis Approaches. *Procedia Computer Science*, 160, 803-810.
- Etikan, I., Musa, S.A. and Alkassim, R.S., 2016. Comparison of convenience sampling and purposive sampling. *American journal of theoretical and applied statistics*, 5(1), 1-4.
- Freitas, A.M., Silva, F.J.G., Ferreira, L.P., Sá, J.C., Pereira, M.T. and Pereira, J., 2019. Improving efficiency in a hybrid warehouse: a case study. *Procedia Manufacturing*, 38, 1074-1084.
- Garbers, C., Heink, S., Korn, T. and Rose-John, S., 2018. Interleukin-6: designing specific therapeutics for a complex cytokine. *Nature Reviews Drug Discovery*, 17(6), .395-412.
- Gruijters, S.L. and Peters, G.J.Y., 2020. Meaningful change definitions: Sample size planning for experimental intervention research. *Psychology and health*, 1-16.
- Harrison, H., Birks, M., Franklin, R. and Mills, J., 2017, January. Case study research: Foundations and methodological orientations. In *Forum Qualitative Sozialforschung/Forum: Qualitative Social Research* 18 (1).
- Ho, T., Daniel, J., Nadeem, S.P., Garza-Reyes, J.A. and Kumar, Vikas. 2017. Improving the reliability of warehouse operations in the 3PL industry: An Australian 3PL Case Study
- Hofstra, N., Petkova, B., Dullaert, W., Reniers, G. and De Leeuw, S., 2018. Assessing and facilitating warehouse safety. *Safety Science*, 105,134-148.
- Inam, R., Fersman, E., Raizer, K., Souza, R., Nascimento, A. and Hata, A., 2018. Safety for Automated Warehouse exhibiting collaborative robots. In *Safety and Reliability–Safe Societies in a Changing World*, 2021-2028. CRC Press.
- Jaravel, X., Petkova, N. and Bell, A., 2018. Team-specific capital and innovation. *American Economic Review*, 108(4-5), 1034-73.

- Johnson, A.H., Chafouleas, S.M. and Briesch, A.M., 2017. Dependability of data derived from time sampling methods with multiple observation targets. *School Psychology Quarterly*, 32(1), 22.
- Jokkaw, N. and Tongthong, T., 2016. Factors influencing on safety management status and evaluation of safety management status in construction projects in Cambodia. *ASEAN Engineering Journal Part C*, 5(1), 34-48.
- Kalu, F.A. and Bwalya, J.C., 2017. What makes qualitative research good research? An exploratory analysis of critical elements. *International Journal of Social Science Research*, 5(2), 43-56.
- Kattepur, A., 2019. Workflow composition and analysis in Industry 4.0 warehouse automation. *IET Collaborative Intelligent Manufacturing*, 1(3), 78-89.
- Kelstrup, C.D., Young, C., Lavalley, R., Nielsen, M.L. and Olsen, J.V., 2012. Optimized fast and sensitive acquisition methods for shotgun proteomics on a quadrupole orbitrap mass spectrometer. *Journal of proteome research*, 11(6), 3487-3497.
- Kenny, D.A., Kashy, D.A. and Cook, W.L., 2020. Guilford press. *Dyadic data analysis*.
- Kumar, S., Narkhede, B.E. and Jain, K., 2021. Revisiting the warehouse research through an evolutionary lens: a review from 1990 to 2019. *International Journal of Production Research*, 1-23.
- Lam, H.Y., Choy, K.L., Ho, G.T.S., Cheng, S.W. and Lee, C.K.M., 2016. A knowledge-based logistics operations planning system for mitigating risk in warehouse order fulfilment. *International Journal of Production Economics*, 170, 763-779.
- Lee, C.K.M., Lv, Y., Ng, K.K.H., Ho, W. and Choy, K.L., 2018. Design and application of Internet of things-based warehouse management system for smart logistics. *International Journal of Production Research*, 56(8), 2753-2768.
- Lopez del Puerto, C., and Fontan-Pagan, J. J., and Molina-Bas, O. I., and Mrozowski, T. L., 2016. *Safety Training on Warehouse Worker Hazards for Structural Steel Latino Workers: Phase 2 Implementation and Assessment* Paper presented at 2016 ASEE Annual Conference and Exposition, New Orleans, Louisiana. (10), 18260-26130
- Lutchman, C., Ghanem, W. and Maharaj, R., 2016. *Safety management: A comprehensive approach to developing a sustainable system*. CRC Press.

- Lutchman, C., Lutchman, K., Akula, R., Lyons, C. and Al Hashmi, W.S.G., 2019. *Operations Excellence Management System (OEMS): Getting it Right the First Time*. CRC Press.
- Makady, A., de Boer, A., Hillege, H., Klungel, O. and Goettsch, W., 2017. What is real-world data? A review of definitions based on literature and stakeholder interviews. *Value in Health*, 20(7), 858-865.
- Mokhasi, O., 2017. Warehouse Housekeeping. Available at: <https://www.selectppe.co.za/blog-article/Blog/warehouse-housekeeping>. Accessed on 07 August 2017.
- Norris, J., 2017. Routledge. *Playbuilding as qualitative research: A participatory arts-based approach*.
- Oakden, R., 2016. Implementing the Best Warehouse Management System. *Learn about logistics*. Accessed from: <https://www.learnaboutlogistics.com/implementing-the-best-warehouse-management-system/>
- Onyemeh, N.C., 2017. *Impact of employee psychological empowerment, process and equipment on operational service quality in the oilfield service industry* (Doctoral dissertation, University of Nottingham).
- Öztürkoğlu, Ö. 2018. Lean and Sustainable Warehousing. In *Handbook of Research on Supply Chain Management for Sustainable Development* 218-241. IGI Global.
- Pagell, M., Klassen, R., Johnston, D., Shevchenko, A. and Sharma, S., 2015. Are safety and operational effectiveness contradictory requirements: The roles of routines and relational coordination. *Journal of Operations Management*, 36, 1-14.
- Park, Y.S., Konge, L. and Artino Jr, A.R., 2020. The positivism paradigm of research. *Academic Medicine*, 95(5), 690-694.
- Rahi, S., 2017. Research design and methods: A systematic review of research paradigms, sampling issues and instruments development. *International Journal of Economics and Management Sciences*, 6(2), 1-5.
- René B. M. De Koster, Andrew L. Johnson and Debjit Roy., 2017. Warehouse design and management, *International Journal of Production Research*, 55(21), 6327-6330, DOI: 10.1080/00207543.2017.1371856

- Richards, G., 2017. Kogan Page Publishers. *Warehouse management: a complete guide to improving efficiency and minimizing costs in the modern warehouse*.
- Rutberg, S. and Bouikidis, C.D., 2018. Focusing on the fundamentals: A simplistic differentiation between qualitative and quantitative research. *Nephrology Nursing Journal*, 45(2), 209-213
- Sabchuk, K.S., 2019. Increasing the efficiency of the warehouse operations within the automation process. In *Логистика: современные тенденции развития* 307-311.
- Serret, H., Deguines, N., Jang, Y., Lois, G. and Julliard, R., 2019. Data quality and participant engagement in citizen science: comparing two approaches for monitoring pollinators in France and South Korea. *Citizen Science: Theory and Practice*, 4(1), 22.
- Sharma, A., Kaur, J. and Singh, I., 2020. Internet of things (IoT) in pharmaceutical manufacturing, warehousing, and supply chain management. *SN Computer Science*, 1(4), 1-10.
- Silverman, D. ed., 2020. Sage Publications Limited. *Qualitative research*.
- Sugiono, N., Ali, J. and Miranda, S., 2020. The effect of employee, management, working environment, and safety culture on occupational health and safety performance: A case study in an oil and gas company in Indonesia. *International Journal of Integrated Engineering*, 12(7), 268-279.
- Tempesti, M. G. (2014), Workers perception of risk and occupational injuries, Risk, Perception, and Response, Lowell, Studio per edizioni scelte, 38-70.
- Terry, G., Hayfield, N., Clarke, V. and Braun, V., 2017. Thematic analysis. *The Sage handbook of qualitative research in psychology*, 17-37.
- Topie J., Buchanan E., Madden T., Fagel M. (2015) Employee Safety. *Regulatory Foundations for the Food Protection Professional*. Springer, New York, NY
- Trab, S., Bajic, E., Zouinkhi, A., Abdelkrim, M.N. and Chekir, H., 2018. RFID IoT-enabled warehouse for safety management using product class-based storage and potential fields methods. *International Journal of Embedded Systems*, 10(1), 71-88.
- Vaismoradi, M., Jones, J., Turunen, H. and Snelgrove, S., 2016. Theme development in qualitative content analysis and thematic analysis.

Wei, L., Jasin, S. and Kapuscinski, R., 2017. Shipping Consolidation with Delivery Deadline and Expedited Shipment Options.

Xiaojun, H. and Ken, C.C., 2020. *Staying Safe at Work: A Guide to Occupational Safety and Health*. Sunway University Press.

Xu, J., Murphy, S.L., Kochanek, K.D., Bastian, B. and Arias, E., 2018. Deaths: final data for 2016.

APPENDICES

Appendix A: Interview questions

Section A: Biographical Data and Organisation Profile

Rank in the organisation:

Gender:

Length of service in the organisation

Which of the following best describes your department or unit?

Inbound

Outbound

Payroll

Human Resources

Risk management

Operations control

Section B: To identify safety practises in retail warehousing operations

1. How often is housekeeping done at Sonwabo Logistics?
2. Do the employees get trained about safety and housekeeping at Sonwabo Logistics?
3. How have you been implementing the safety practises in your branch/department?

Section C: To assess the extent of technological application to advance the warehouse safety levels

4. How often is the maintenance of the machinery and equipment done?
5. How would you explain some of the perceptions of employees about Sonwabo Logistics safety policy?
6. Has the system been evaluated to assess its effectiveness? If yes, what were your views about the evaluation?

Section D: To examine whether the safety legislative section, standard operating procedures, and housekeeping strategy influence warehouse safety level

7. Does Sonwabo Logistics have a legislation that guides its safety operations? Please elaborate
8. Does Sonwabo Logistics safety system have any effect on the performance of individual employees? Please elaborate?
9. Does negligence form part of housekeeping injuries?

Section E: To determine the extent of warehouse mechanisation and automation to influence employee safety for materials handling and ergonomics

10. Do you think that the warehouse mechanisation system is achieving its intended purpose? Please elaborate
11. What are some of the challenges you experienced in using the automation system to ensure employee safety?
12. What areas of improvement do you think the materials handling system requires?
13. Can you recommend improvements to these areas?

Appendix B: Nvivo Analysis



Appendix C: Ethical clearance



16 September 2020

Miss Sinethemba Sibahle Mdlalose (214509010)
School Of Man Info Tech & Gov
Westville Campus

Dear Miss Mdlalose,

Protocol reference number: HSSREC/00001809/2020

Project title: Factors inhibiting safety practices in warehouse operations: A case of Sonwabo logistics.

Degree: Masters

Approval Notification – Expedited Application

This letter serves to notify you that your application received on 17 August 2020 in connection with the above, was reviewed by the Humanities and Social Sciences Research Ethics Committee (HSSREC) and the protocol has been granted **FULL APPROVAL**.

Any alteration/s to the approved research protocol i.e. Questionnaire/Interview Schedule, Informed Consent Form, Title of the Project, Location of the Study, Research Approach and Methods must be reviewed and approved through the amendment/modification prior to its implementation. In case you have further queries, please quote the above reference number. PLEASE NOTE: Research data should be securely stored in the discipline/department for a period of 5 years.

This approval is valid until 16 September 2021.

To ensure uninterrupted approval of this study beyond the approval expiry date, a progress report must be submitted to the Research Office on the appropriate form 2 - 3 months before the expiry date. A close-out report to be submitted when study is finished.

All research conducted during the COVID-19 period must adhere to the national and UKZN guidelines.

HSSREC is registered with the South African National Research Ethics Council (REC-040414-040).

Yours sincerely,



Professor Dipane Hlalele (Chair)

/dd

Humanities & Social Sciences Research Ethics Committee
UKZN Research Ethics Office Westville Campus, Govan Mbeki Building
Postal Address: Private Bag X54001, Durban 4000
Tel: +27 31 260 8350 / 4557 / 3587
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Appendix D: Editor's certificate of research authenticity

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Certificate of Authenticity

CERTIFICATE: COB00 1 7202 1 (SM)

8 August 2021

To Whom It May Concern,

This is to certify that **"FACTORS INHIBITING SAFETY PRACTICES IN WAREHOUSE OPERATIONS: A CASE OF SONWABO LOGISTICS"** by SINETHEMBA SIBAHLE MDLALOSE, has been professionally edited by Miss. Rita Shani M. of BluePrint Proofreading and Editing Services for Students and Professionals.

Document:

Job Number	Document title
BP COB00 1 7202 1 (SM)	Factors inhibiting safety practices in warehouse operations: A case of Sonwabo logistics

Miss. Rita Shani

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