SUPPLY CHAIN RISK MANAGEMENT STRATEGIES AND PERFORMANCE OF AUTOMOTIVE INDUSTRY IN KENYA DURING COVID-19 PANDEMIC

BY

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DECLARATION

By submitting this research project, I Muchiri Denis Ngatia hereby certifies that the research study is entirely unique to him and has not been copied from another author's similarly published work for academic purposes, which is a condition of several universities.

Signature……  …….Date ……24th November 2022……

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APPROVAL

I, the university's supervisor, have given my consent for this project's submission for evaluation.

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DEDICATION

I want to express my gratitude to the All-Mighty God for helping me with this challenging academic project. My family, my mentor, Dr. Nancy Marika, Dr. Lelei, Magutu, and Ms. Bridgit Kittony and I are also honored by this study effort.

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COVID-19	Coronavirus Disease
RDT	Resource Dependence Theory
RM	Risk Management
SC	Supply Chain
SCM	Supply Chain Management
SCRM	Supply Chain Risk Management
TCT	Transaction Cost Theory

ABSTRACT

Projects to improve the supply chain are well known in the automotive industry. Companies in the automotive industry utilize SCRM to shield themselves from the negative consequences of supply chain disruptions. There isn't any research being done on the usage and value of SCRM solutions right now because of the COVID-19 hiatus. The objective of this study was to fill knowledge gaps and assess the performance of the Kenyan automobile industry during the COVID-19 pandemic by soliciting input from the sector for the analysis. For the investigation, a descriptive research design was adopted. 108 departmental managers from Nairobi-based dealers and assembly, including D T Dobie, Toyota-Kenya, Cooper Motor Corporation, Isuzu East Africa, and Simba Colt, Mobius, Kenya Vehicle Manufacturers (KVM), Associated Motors (AM), and CMC Holdings, were the target audience. Primary data were gathered for the study using a standardized questionnaire. The means for each variable were computed after the data had been coded. The outcomes for each variable were totaled and grouped based on means. Using mean and standard deviation tables, the data collected for analysis was tallied. During the COVID-19 epidemic, correlation was utilized to determine links between SCRM and the success of Kenya's automobile industry. The study's conclusions were that the automobile industry's risk treatment, risk transfer, risk termination, risk tolerance, and weakening concerns all had a P-value of 0. Therefore, the variables can be used to evaluate how the automotive sector in Kenya performed during the COVID-19 epidemic. P value of 000, the analysis came to the conclusion that the automobile firm was unable to fully implement the low distributions strategy during and after COVID-19, and risk mitigation was not properly applied. In order to have SCRM strategies and performance of the automotive industry in Kenya, the study advised automotive manufacturers to develop effective resilience of supply risk management strategies both during and beyond the COVID-19 term. The employment of modern supply chain management systems by automotive companies will also help them overcome difficulties in tracking the location and quality of their products during COVID-19, as well as problems with logistics and transportation.

CHAPTER ONE: INTRODUCTION

1.1 Background of the study

The automotive industry ranks among the most significant global economic sectors in terms of output and employment. Nearly 95 million automotive and other types of vehicles were produced worldwide in 2021 (Dias, et al., 2021). Over 5% of all industrial employment worldwide is supported by over 9 million direct jobs in component assembly and manufacturing, with over five times as many indirect jobs (Çıkmak & Ungan, 2022).

Due to the numerous components that go into making a car, the supply chain for the industry is complicated. The many tiers of vendors required to supply those components, as well as the coordination of goods, data, and monetary movements along the supply chain (kmak & Ungan, 2022). Such supply chain disruptions can immediately harm a company's ability to succeed (Dohale, et al., 2021). The complexity of the automobile industry has increased as globalization has come to be accepted as the norm in the industry. Modern techniques including just-in-time delivery, lean production, and supplier consolidation are also employed. As a result, numerous dangers are becoming more common in the supply chains for the automotive industry. The automotive sector must consequently prioritize risk management in supply chain (Yang, et al., 2021).

Automotive supply chains demand close coordination between participants due to the lengthy lead times of the products, and only a small number of suppliers have the core competencies, infrastructure, and capacity to meet customer expectations with the necessary levels of quality. Power dynamics play a significant role in determining opportunities for supply chain actors like suppliers (Pournader, Kach & Talluri, 2020). The definition of a supply chain states that it is a network of internal and external businesses working together in order to meet customer demands. The success of this collaboration depends heavily on internal and independent external elements (Çıkmak & Ungan, 2022).

The coronavirus is a serious example of an external influence. In addition to having horrible social effects, Pandemic has a significant impact on local and global supply chains, as well as local and global economic conditions (Nyachomba & Achuora, 2022). Bullwhip effects of the virus started to affect the supply chains for automotive parts when sick people were only being registered in China at the time. The short-term signs may be seen practically immediately, but

it is very difficult to predict the difficulties and repercussions on the economy that the partnering organizations will have to face (Liu, Ji & Wei, 2022).

Many ideas have been proposed to explain the performance of the automotive sector and SCRM. The guiding theories for this work include resource dependence theory, transaction cost theory, and knowledge-based view theory.

The study filled a knowledge gap on SCRM and how the Kenyan automobile industry fared during the COVID-19 epidemic. The study served as a case study for other Kenyan market and possibly other parts of the world with markets that have characteristics similar to Kenya's automobile sector. Most notably, the study contributed to the resolution of issues surrounding the impact of supplier relationship performance on the Kenyan automotive sector during the COVID-19 pandemic.

1.1.1 SCRM Strategies

Supply Chain Risk Management (SCRM) has a big impact on how well partners work and how well the entire manufacturing chain functions in automotive firms. Automotive companies can gain a competitive edge by constructing a supply management that is adaptable to market changes (Oliveira, et al., 2019). A robust supply chain is necessary to assure business continuity. Supply chains are more vulnerable with time and exposed to associated risks due to two factors: spatial connection dispersion and growing firm interdependence. Operational contingencies include things like equipment damage, systemic failures, abrupt supplier discontinuities, growing chain size and complexity, shortened product life cycles, unpredictable business climate, and other things (Pournader, Kach & Talluri, 2020).

During and after the COVID-19 outbreak, the risk might emerge from a number of sources, including the automotive industry itself or the surrounding commercial environment. Risk management is increasingly being incorporated into plans for thorough SCRM, leading to SCRM. The sources of risk must be characterized after being found. This is a crucial stage in managing supply chain risks because it enables effective resource allocation to lower the risks that have the highest potential of creating losses (Oliveira, et al., 2019). Ranking the risk sources offers methods for controlling each source of risk separately as well as aids in determining which dangers need to be handled immediately. It is necessary to prioritize the sources of risk after identifying and assessing them due to the vast number with a focus on those that are more significant in terms of the likelihood of occurrence and ability to generate losses in order to create an effective action plan. A hierarchical structure must be developed

for preventive or mitigating efforts in automotive firms because resources are limited (El Baz & Ruel, 2021).

The literature can be used to identify organizational trends as well as components that could make the chain more vulnerable. These elements include the potential for global competition, elevated risk exposure for chains, and the introduction of new risk dimensions. The automotive sector is being forced by the current changes to take into account both the worldwide marketplaces for customers and suppliers (Abdel-Basset & Mohamed, 2020). Internationalization can improve profits and decrease costs, but also makes supply chains more complicated, increasing their risk exposure and management complexity (Manhart, Summers & Blackhurst, 2020). The chain's size and degree of interconnection among its participants also increase the risk of harm in terms of vulnerability. This characteristic makes it particularly difficult to identify supply chain vulnerabilities because of the complex relationships between its component pieces. Decisions on whether to accept as part of risk management. It may also entail taking measures to decrease the consequences or the possibility that a bad thing will happen (Norrman & Wieland, 2020).

1.1.2 Performance

The term "performance" refers to the outcomes that show or reflect how effectively or ineffectively a company uses its resources and generates revenue. It emphasizes the organization's efficacy, productivity, efficiency, and quality. The company needs to continue existing in the current harsh environment (Yang, et al., 2019). Organizational performance must be closely monitored in order to increase organizational effectiveness. The relationship between minimal is one of the topics covered by performance in terms of its substance. Effectiveness is measured by the relationship between effective cost and realized production as well as between output and successful outcome. The performance is the process of using deliberate actions to improve the productivity and well-being of an organization's employees (Baumann, Schmidt & Stieglitz, 2019). Performance analyzes the discrepancy between the organization's anticipated outcomes, aims, and objectives and its actual output or results. Organizational outcomes include the efficiency of an organization's multiple operations, employee productivity, client satisfaction, and the standard of its products and services (Chen, Li & Zhang, 2021).

"If you cannot measure it, you can't govern it" (Yang, et al., 2019). Something you cannot control cannot be managed. Something you are unable to manage cannot be improved (Baumann, Schmidt & Stieglitz, 2019). Performance measurement is the process of giving

distinct firm operations, such as differentiation and efficacy, a numerical value. Efficiency refers to how well a company uses its resources to satisfy customers to a predefined degree (Maroufkhani, et al., 2019). When a business sets itself apart from competitors in ways that are clear to the customer, it is standing out from the pack. The wide range of indicators used to evaluate a company's success includes metrics for efficiency and differentiated activity. The weighted mean of environmental distinctiveness and cost-effectiveness will be used to reflect overall business performance.

1.1.3 Automotive Industry in Kenya

Kenya's automotive industry is well-established when compared to those of the other nations in the East Africa Community. The spare parts market is likewise very different from other markets. More SCRM is given to the importing of these goods in order to guarantee their exceptional quality. This is partly because more stringent regulations have compelled them to change with the times, (Lagat, 2021). The road is the most widely used form of transportation in Kenya. According to Irene, (2018) roadways automotive 94% of the nation's passenger and automotive go traffic. Motorbikes, pickup trucks, buses, Lorries, automotive, and pickup trucks were among the 4.8 million registered motor vehicles in the nation by the end of 2021. Twelve new automotive dealerships are currently in business across the nation, and seven of them dominate the new automotive market by more than 82% (Barnes, et al., 2021). The top seven dealers were D T Dobie, Toyota -Kenya, Mobius, CMC Holdings, Cooper Motor Corporation, General Motors (EA) and Simba Colt.

Participants in the business have evolved market share acquisition and retention strategies in response to escalating customer expectations and want as well as intense competition. The businesses have improved their creativity by focusing on developing local commercial vehicle assembling and expanding their operations globally. There are two primary categories for Kenyan auto sales. Sales of new vehicles from well-established auto dealers who focus on a small number of automotive fully chosen vehicle brands and after-sales services and who hold the bulk of local franchises for parts and services from foreign automakers (Barnes, et al., 2021).

Sales of pre-owned vehicles from dealers who operate in a less formal setting and offer a range of vehicle brands in response to consumer demand. Low entry barriers, the danger of alternatives from dealers in secondhand items, and intense competition among enterprises are characteristics of the sector (Mutuku, 2018). Due to Kenya's growing population, the

importation and sales of automotive have steadily increased over the previous ten years. The elements of increasing incomes, quicker economic expansion, and easier access to bank credit for auto financing. Along with this increase in sales, additional types and models of automotive are now available from both new and used automotive dealerships, offering motor vehicle buyers more alternatives (Lagat, 2021).

1.2 Problem Statement

The automotive industry is we SCRM from the negative effects of supply chain interruptions (Pournader, Kach & Talluri, 2020). In order to maintain continuity and the supply chain's profitability at long run, SCRM is used since it is the process of risk reduction done via collaboration, coordination, and use of risk management technologies among the partners. It's critical to remember that risk cannot be totally eradicated from supply chains during COVID-19 or after the pandemic. However, if the dynamics between the variables linked with supply chain hazards are identified both during COVID-19 and after the pandemic, solutions to mitigate these risks can be devised (Abdel-Basset & Mohamed, 2020). The fundamental goal of SCRM is to increase expected profit or decrease expected loss in the event of a supply chain disruption. Risk management has evolved into a crucial tool for addressing risks in supply chain management (El Baz & Ruel, 2021).

The vast majority of nations had put in place a variety of regulations to prevent the coronavirus from spreading further. These restrictions, which included factory halts, border closures, and social distance rules, had varying degrees of influence on different sectors. As a result, the automotive industry was impacted by these major difficulties and interruptions that escalated the failures not only in the operations of the global supply chain but also in particular sectors of varied sizes (Dohale, et al., 2021). Due to safety requirements, a lack of spare parts, a lack of workers, and an inability to access transportation, the bulk of manufacturing enterprises that were heavily entangled in the global supply chain were forced to suspend their operations. There was volatility, uncertainty, complexity, and ambiguity in the environment, these disturbances exposed supply chain operations' previously hidden weaknesses. It demonstrates how vital it is for automotive industry businesses to have operations that are both robust and sustainable (Çıkmak & Ungan, 2022). Due to the coronavirus spreading over the world and into the Kenyan automotive industry during the early stages of the pandemic. The automotive industries temporarily saw a substantial decline in supply and demand as well as new limitations. It has been dealing with risks and disruptions that fall within the categories of

supply, demand, manufacturing, information, transformation, and financial hazards (Liu, Ji & Wei, 2022).

In order to frame the COVID-19 disruption from an SCRM perspective, many researchers have already proposed resilience strategies and escape routes (Dias, et al., 2021) In addition, to look into a new post-COVID-19 research program, the first SCRM literature reviews were completed (Dohale, et al., 2021). Other scholars place a greater emphasis on technical or sustainable approaches of increasing post-COVID-19 SCRM than on will know traditional supply chain methods (Yang, et al., 2021). Additional research simulates the SCRM component's long-term disruptive effects on supply systems (Çıkmak & Ungan, 2022).

The output of research and publications has not kept up with the pace required by the industry. However, our assessment of the literature revealed two major gaps pertaining to SCRM. The study was conducted at the beginning of the epidemic, to start with. It is now possible to examine the performance of the automotive industry's supply chain after a year has passed since the initial COVID-19 disruption (Nyachomba & Achuora, 2022). The second difference is in how the automotive industry managed SCM during the COVID-19 outbreak in Kenyan markets. Because of the COVID-19 interruption, there was no currently research on the application and worth of SCRM strategies. This study sought input from the automotive sector for the analysis in order to close knowledge gaps and evaluate the performance of the automotive industry in Kenya during the COVID-19 outbreak.

1.3 Objective of the Study

The general objective of the study was assessing the supply chain risk management strategies and performance of automotive industry in Kenya during COVID-19 pandemic.

Specific objectives;

I. To establish SCRM strategies in automotive industry in Kenya.
II. To evaluate the issues that result from supply chain in the automotive sector during COVID-19 pandemic.
III. To determine the relationship between SCRM strategies and performance.

1.4 Value of the Study

This study provides numerous potentially helpful managerial insights. Despite the scientific and practical interest in SCRM and COVID-19, managers have found it difficult to get sound guidance on how to manage SC management and Kenya's automotive sector performance during the COVID-19 pandemic and ultimately increase performance.

The empirical findings may also assist managers in comprehending the potential origins of SCRM practices in internal corporate cultures, for instance, environmental philosophies designed to improve the performance of the Kenyan automotive sector both during and after the COVID-19 outbreak. This may be in contrast with certain managers' beliefs that external demands and threats are primarily responsible for the deployment of SCRM in the automobile sector.

A regulatory framework, which is often developed by a government or other body, is a structure for enforcing rules. The study's conclusions may provide the government's agencies with the knowledge they may use to develop SC management rules for Kenya's automotive industry.

The study can be useful for identifying new research fields based on its findings for academics, students, and other researchers. The study can assist other academicians who are researching the same subject and serves as a resource for future scholars on similar subjects. It also draws attention to other crucial connections found in the auto industry paradigm that might call for more study.

CHAPTER TWO: LITERATURE REVIEW

2.1. Introduction

This section covered the theories relating to SCRM strategies and the performance of the automotive sector. It also included an empirical review and the study's factors and framework.

2.2. Theoretical Perspective

To explain the performance of the automotive industry and SCRM, many theories have been put forth. The resource dependence theory, the transaction cost theory, and the knowledge-based view theory served as the study's guiding principles.

2.2.1 Resource Dependence Theory

The resource dependence theory (RDT), which is based on an alternative social theoretical framework, suggests inter-firm governance as a strategic response to circumstances involving trading partners' dependence and uncertainty (Chindondondo, 2020). RDT focuses on how certain companies grow reliant on third parties for materials, supplies, and other necessities. The most effective company management techniques for these partnerships (Kim, Lee & Hwang, 2020). It is generally held that such links' unequal interdependence is crucial for lowering environmental uncertainty. In this setting, SC actors usually work together to accomplish common goals. The main explanatory power in this situation is provided by RDT due to their rising dependency.

According to various Wang, et al., (2018) this idea has implications for significant SC control elements. RDT in that it sees the employer as attempting to exploit and recombine distinctive sources that may be located outside the firm and in which strategy oriented toward the relationships may wish to result in the capture of these resources. (Kim, Lee & Hwang, 2020).

The common justification for the creation of SC links that adheres to the resource reliance paradigm is that businesses enter into partnerships to profit from complementary assets. Both large automotive industry and tiny biotech firms recognize this technique as an example. Massive corporations are eager to collaborate with small automotive industry in order to benefit from their entrepreneurial spirit and reducing part research (Chindondondo, 2020).

2.2.2 Transaction Cost Theory

Cuypers et al. (2021) claim that managers are subject to a variety of hazards, some of which may have an effect on the SC. These dangers might be connected to both the specifics of the business's industry and the state of the economy in general. Industry risks, for instance, include

risks related to supply, demand, and procedures, in contrast to wide environmental hazards, which might be linked to political unpredictability, macroeconomic instability, and natural threats.

It tries to explain why the companies it promotes are necessary (Rindfleisch, 2020). TCT seeks to reduce transaction costs while deciding whether to create or buy within the context of SCM. Whether to make or purchase a company depends on three factors. They are asset specificity, transactional uncertainty, and transaction frequency. According to the TCT theory, different control and governance mechanisms should be utilized to reduce the risk of SC firms acting opportunistically while outsourcing.

The optimal style of governance is determined by an exchange relationship's transaction costs, in accordance with transaction cost theory. Operations management in general and SC management specifically should employ transaction cost theory, according to Calveras & Orfila-Sintes (2019). Future transaction cost research should be expanded upon to assess other SC management concerns. For instance, hazards associated with SCs and issues coordinating information and material flows among organizations because of intricate and global supplier chains. In response to this appeal, the performance of the automobile industry in Kenya. This research will examine and the COVID-19 pandemic in Kenya.

2.2.3 Knowledge-Based View Theory

Improved learning capacity, which is frequently linked to the knowledge-based viewpoint, may help a company's value proposition. Hamilton & Philbin assert that SCRM -related value generation is not new (2020). Organizational knowledge aids SC managers in creating frameworks for conversation, information sharing, and cooperative teaming (Caputo et al. 2019). Later empirical research demonstrated the beneficial effects of knowledge management on a number of corporate SC elements.

Flothmann, Hoberg & Gammelgaard (2018) claim that knowledge management may assist companies in more efficiently. To add value to the SC, build new market and business knowledge. Information management, in particular, facilitates the development of practical plans and fallback options to control the effects of SC disruptions. Because it is concentrated on getting new information that would improve a firm's performance, knowledge management, may give SC members a competitive edge (Hamilton & Philbin 2020).

According to Sheffi, (2021) organizational knowledge is advantageous to SCs since it enables companies to seize opportunities and/or avoid threats (Caputo, et al., 2019). The knowledge-

based perspective holds that knowledge, by creating, is the basis of an organizational knowledge process in the current context. Transferring, exchanging, and implementing the knowledge gained regarding intricate network operations that help in determining, assessing, and reducing the likelihood, repercussions, and gravity of several potential causes of SCRM.

2.3 SCRM Strategies

2.3.1 Risk Treatment

The first method for controlling risk mitigation, or taking actions to lower the possibility or severity of a threat (Guzik, et al., 2020). When it comes to the automotive industry's SC experts, distribution was a top concern both before and after the COVID-19 outbreak. A delivery problem will cause missed sales, decreased revenue, eroding margins, and a loss of profit in the automotive sector both during and after the COVID-19 outbreak (Yu, Umar & Rehman, 2022). These problems impact the entire industrial operation of an automotive company, not only the SC function, both during and after the COVID-19 epidemic. It is more important because a delivery failure hurts the automotive company's reputation in the market both before and after the COVID-19 epidemic (Samimi, 2020). In-depth risk studies are carried out at each origin by SC professionals in order to successfully avoid distribution disruption (Sheffi, 2021). After they have identified all potential problem areas, they can choose the best way to deploy resources to protect against vulnerabilities. For instance, in the event of a transportation breakdown, a corporation in the automotive industry may deploy additional vehicles, modes, and operators. Utilizing many vendors helps to decrease supplier failures both during and after the COVID-19 pandemic. Risk treatment in SC management, in particular, according to Yang et al. (2021), It is believed that RM entails locating possible risk sources and putting in place the appropriate safeguards to minimize vulnerability to them through coordinated efforts across chain participants.

2.3.2 Risk Transfer

It may be more advantageous for automotive companies in the sector to increase data availability, a key element of RM strategy during and after the COVID-19 pandemic, than to transfer risk to other SC partners (Huynh, Burggraf, & Nasir, 2020). During and after the COVID-19 epidemic, data sharing, analysis, and utilization are beneficial to SC partners, including insurance. For instance, reliable data might provide suppliers with a foundation for the business continuity strategy for the automotive industry in the event that a facility is shut down during or after the COVID-19 pandemic. It provides insurance companies with a clearer

picture of how vulnerable their SC is, enabling them to provide greater coverage limits and the proper risk premiums.

Currently, this information is not being routinely shared by insurance companies and vehicle companies during and after the COVID-19 outbreak. 69 percent of managers, according to Kong, (2021) do not have complete visibility into their supply networks. Furthermore, almost a quarter of respondents do not investigate the cause of the disturbance. Sharing and analyzing data must take precedence as RM takes on greater significance across all automotive firm business functions (Yu, Umar & Rehman, 2022).

In the event that a risk (or event) covered by the insurance policy materializes, the objective of both of these plans is to restore your financial situation. The primary goal of risk transfer in the COVID-19 pandemic SCRM plan for the automotive industry is to lessen the impact, which would mostly be financial. As a result, the auto industry is willing to take a chance on the COVID-19 pandemic. Continued risk transfer in supplier due diligence is required, say Ozdemir et al. (2022), and if restrictions are lifted, there may be opportunities to repair gaps brought on by the epidemic. Organizations need to be able to comprehend completely how risk transfer works inside SCs. A supplier signing their code of conduct is of little use if they are not also going to audit them to ensure compliance.

2.3.3 Risk Terminating

Terminating Risk is the most straightforward and most neglected method of SCRM. Wherever practicable, should be chosen over others because it only involves reducing risks. To achieve this, an intrinsically risky procedure or practice might be modified to make it risk-free (Aoyama, & Obara, 2020). Evaluation of the practices and strategies used in every facet of the operations of the automotive sector during the COVID-19 epidemic can be done using the same methodology. If a risk can be adjusted or eliminated without significantly harming business operations in the automotive industry, that is the first course of action that should be investigated rather than attempting to treat, tolerate, or transfer it (Yu, Umar & Rehman, 2022). Instead of protecting the asset or taking no safeguards at all and accepting the risks, this strategy removes the asset from the risky area (Sheffi, 2021). If an automotive firm engaged in the sector during the COVID -19 outbreak determined that the hazards connected with maintaining the resource's operational status surpassed the advantages of doing so, a server might be removed from a network as an example of this strategy (Westborg & Rosso, 2018).

However, risks that would adversely impact the automotive sector's ability to make money during the COVID-19 epidemic should only be avoided. As a result, if automakers in the sector avoid all risks, they can miss out on good opportunities. You never know, that investment they rejected might have turned out to be successful. As a result, it's critical for automakers to thoroughly weigh risks and make the best choice feasible (Reiter & Pollack, 2022).

McMaster et al. (2020) claim that the COVID-19 pandemic has disrupted supply and demand, which has an impact on SC management and operations. This demonstrates that increasing SC management flexibility is necessary to reduce the risks associated with the pandemic and demand and that eliminating risk is not the sole solution. Various RM techniques that businesses can use are covered in order to solve this, as well as crucial areas for improvement in SC management and operations.

2.3.4 Risk Tolerance

If the three aforementioned strategies have been tried and failed by automotive companies in the industry during and after the COVID-19 epidemic, there is a fourth option, acceptance. The cost of avoidance, transfer, or mitigation may simply surpass any potential advantages during and after the COVID -19 pandemic. Automotive industry executives may decide that in some circumstances accepting the risk and its consequences as a necessary evil is the best course of action (Shah, et al., 2020).

The best course of action when danger cannot be avoided is to attempt to transfer it. For instance, a corporation in the automotive sector might get insurance to protect the delivery of automotive rates at their distribution facility. Insurance premiums may be expensive, but rate delivery inventory management can be expensive (Yu, Umar & Rehman, 2022). The risk that has been transferred to the insurer may be fully or partially repaid to automotive companies in the sector. By incorporating wording in contracts that transfers responsibility to the supplier or automotive during and after the COVID-19 epidemic, automotive companies in the sector may transfer risk in a different way. The supplier or automotive is liable for any damages that occur while the item is in transit. Danger transfer makes sure that the vehicle firm in the industry can recover and restart operations soon, even though it won't completely remove the risk during and after the COVID-19 epidemic (Sheth, & Wright, 2020).

Because every contract contains some level of risk, there is a risk retention component in every contract that an automotive business signs, renegotiates, or renews in the industry both during and after the COVID-19 outbreak (Sheffi, 2021). During and after the COVID-19 epidemic,

the automotive firm in the industry is responsible for including this in planning, risk assessment methods, and routine reviews of the risk appetite and tolerance framework. Retention of contract risk is represented by every active contract (Yu, Umar & Rehman, 2022).

According to van Hoek's results from 2021, not only have risk tolerance in pandemic not been reduced at all, but many other types of dangers have also become more serious. For the SC to be more resilient and to reduce risks, SC and procurement top leaders have a lot of work to do. Thus, they concluded that for traveling a pathway toward risk mitigation, taking behavioral variables into account is essential in addition to them strategies. According to Shahin, et al. (2022) companies should check the financial flow of the suppliers they work with. Companies that source goods or services must regularly assess the financial stability of their suppliers and take into account their own resilience in the event that one. More of these vital suppliers fail or refuse to provide, for example if their own government restricts export as we saw in the pandemic scenario.

2.3 Performance of Automotive Industry

In order to foresee, plan for, and minimize supply network dangers, academics contend that increased SC visibility is essential to SCRM. SCRM, according to Schiele, Hoffmann, and Korber, boosts the performance of the automobile sector by lowering operating losses, enhancing responsiveness, and preventing SC interruptions (2020). Governance structure has an effect on how well a business performs in terms of transaction costs. In order to reduce uncertainty and improve performance, SCRM is a crucial governance tool for businesses (El Baz & Ruel, 2021). SCRM as a governance instrument dramatically enhanced performance.

Four primary performance measures responsiveness, adaptability, quality, and efficiency were the study's key areas of concentration. According to Schiele, Hoffmann & Korber (2020) SCRM helps the automobile industry perform better by assisting with SCM detection, evaluation, and mitigation. SCRM enables businesses to detect potential hazards that can be dealt with, increasing responsiveness and cost effectiveness in the post-COVID-19 era where orders are filled quickly and on schedule with on-time deliveries. In the post-COVID-19 climate, an automotive company can be more adaptable by managing SCM from the upstream to the downstream (Ferguson & Drake, 2021). Last but not least, improved quality controls and processes to thwart inferior goods are produced by SCRM. It was therefore proposed that SCRM reduces risk by preventing SC interruptions, which will ultimately improve the performance of the automotive industry in this post-COVID-19 time (Yu, Umar & Rehman,

2022). But a number of research (Dohale et al., 2021). Used a variety of methods, which produced a diversity of outcomes.

2.4 Issues Resulting from supply chain Weaknesses in the Automotive Sector during COVID-19 Pandemic

Due to the pandemic, businesses have seen significant shifts in client demand and disruptions in the Supply Chain (SC). According to Schiele, Hoffmann, and Korber (2020) in a paper on rethinking SC resilience for a post-pandemic future, at least 82% of companies' businesses had trouble monitoring their end-to-end SCs in the preceding year. The key issues raised by business owners included accurately allocating the transport capacity, foreseeing consumer demand, and monitoring the whereabouts and state of their product. In times of geopolitical unrest, end-to-end transparency is lacking in global supply networks may increase the risk of business disruption (Ferguson & Drake, 2021). Without the necessary knowledge to recognize interruptions and take appropriate action, automotive companies in the industry may face significant financial losses. Our daily requirements, like mobile phones and automotive, are now created via global component sourcing thanks to the acceleration of globalization. Automotive companies in industries dependent on worldwide SCs may have more difficulties in the future (Sheffi, 2021). Having insufficient information to make wise decisions during and after COVID-19 is a recurring problem for automotive firms in industry business leadership, and SC management in particular (Yu, Umar & Rehman, 2022).

Schiele, Hoffmann & Korber, (2020) the way information is collected, handled, and kept makes it difficult to use traditional transactional-based enterprise resource planning for recognizing forward-looking patterns, even while it excels at processing massive volumes of data. The same is true for the majority of automotive companies in the industry, where business analytics are fantastic for summarizing the past but offer little insight into potential SC problems in the future. In order to solve SC problems, one must be able to analyze data and find the best possible solution. Study of Uchehara et al. (2020) who indicated in their study that the emergence of a dynamic trend that is based on contract clause change and is indicative of a sector-wide mitigation strategy in logistics and transportation.

The application of optimization methods, which serve as the foundation for contemporary prescriptive analytics, offers a solution to this conundrum (Ferguson & Drake, 2021). Advanced modeling approaches are used by automotive organizations in the industry business

to give prescriptive analytics, the capacity to model their SC in a way that truly reflects how it runs, taking into account all inputs, as well as having the ability to measure trade-offs. Additionally, with the aid of this type of SC modeling, an automotive company is able to assess various scenarios and determine the best course of action for resolving SC problems and achieving SC objectives by utilizing the enormous amounts of structured and unstructured data at their disposal Ozdemir, et al., (2022)

2.5 Performance

The term "performance" refers to the outcomes that show or reflect how effectively or ineffectively a company uses its resources and generates revenue. It emphasizes the organization's efficacy, productivity, efficiency, and quality. The company needs to continue existing in the current harsh environment (Yang, et al., 2019). Organizational performance must be closely monitored in order to increase organizational effectiveness. Performance is the process of converting inputs into outputs in order to accomplish specific goals. The relationship between minimal is one of the topics covered by performance in terms of its substance. Effectiveness is measured by the relationship between effective cost and realized production as well as between output and successful outcome. The performance is the process of using deliberate actions to improve the productivity and well-being of an organization's employees (Baumann, Schmidt & Stieglitz, 2019). Performance analyzes the discrepancy between the organization's anticipated outcomes, aims, and objectives and its actual output or results. Organizational outcomes include the efficiency of an organization's multiple operations, employee productivity, client satisfaction, and the standard of its products and services (Chen, Li & Zhang, 2021).

"If you cannot measure it, you can't govern it" (Yang, et al., 2019). Something you cannot control cannot be managed. Something you are unable to manage cannot be improved. In reality, it has been acknowledged that one of the main issues with process management and the management of SC strategies is the lack of acceptable performance indicators (Baumann, Schmidt & Stieglitz, 2019). Performance measurement is the process of giving distinct firm operations, such as differentiation and efficacy, a numerical value. Efficiency refers to how well a company uses its resources to satisfy customers to a predefined degree (Maroufkhani, et al., 2019). When a business sets itself apart from competitors in ways that are clear to the customer, it is standing out from the pack. The wide range of indicators used to evaluate a company's success includes metrics for efficiency and differentiated activity. The weighted

mean of environmental distinctiveness and cost-effectiveness will be used to reflect overall business performance.

The link in performance management between discussing performance and acting on feedback is provided by the goals. Performance management, whatever of its format, should never only be concerned with the past. Performance conversations are held in order to promote future growth. The best way to ensure that this important next step is taken is through goals. When used effectively, reviews, objectives, and continuing feedback can support one another across the whole performance management cycle (Yang, et al., 2019). Continuous feedback is a continuous source of new suggestions for performance improvement, reviews are an opportunity to consider those suggestions and have a lengthy conversation about them, goals help put the conversation into action, and feedback then comes back in to confirm goal progress and raise new suggestions for the upcoming review and goal-setting cycle (Yang, et al., 2019).

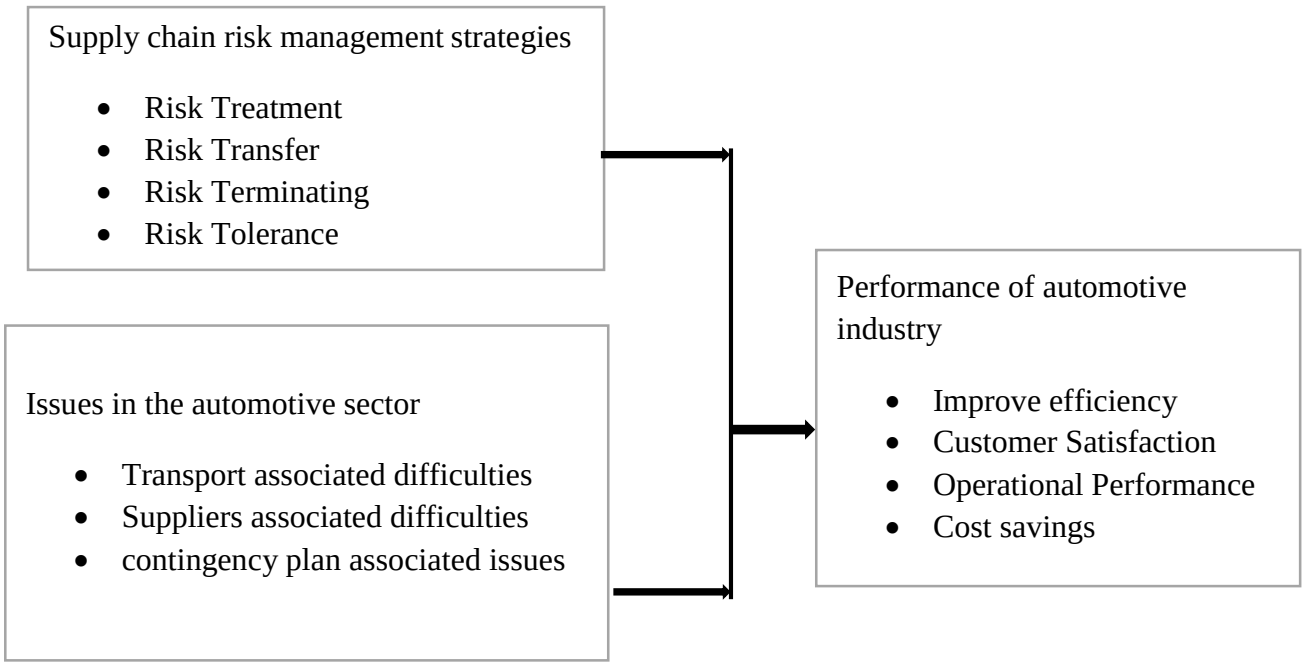
2.6 Research gap

An examination of the literature revealed two substantial gaps in the body of knowledge on SCRM. However, our review of the literature revealed two critical gaps in our knowledge of SCRM. To begin with, the study was conducted prior to the outbreak of the epidemic. After the initial COVID-19 interruption, which lasted a year, it is now possible to evaluate the SC performance of the automotive industry (Nyachomba & Achuora, 2022). The second distinction is how the car industry handled SCM when COVID-19 broke out in Kenyan markets. There is presently no study on the use and value of SCRM solutions due to the COVID-19 hiatus. This study sought input from the automobile sector for the analysis in order to close knowledge gaps and evaluate the performance of the automotive industry in Kenya during the COVID-19 outbreak.

2.7 Conceptual framework

Independent Variables **Dependent Variables**

Figure 1: Conceptual framework



Source: (Author 2022)

CHAPTER THREE: RESEARCH METHODOLOGY

3.1. Introduction

The research's study methodology was described in this section. The following subheadings were included in the chapter: research plan, analysis, population sample design, data gathering procedures, and analysis.

3.2. Research Design

A descriptive research design was used for this investigation. Aityan, (2022) claims that it provides accurate information based on several data collecting methods, enabling researchers to more accurately explain a problem than they could without using this methodology. When conducting descriptive research, the characteristics of the variables of interest are determined and documented in a way that accurately captures the context.

3.3. Population of the Study

According to Scalcau, (2021) population is a grouping of parts, things, and people. Aityan, (2022) emphasizes the importance of a population as an analytical unit since scholars are interested in examining its characteristics. The dealers namely; D T Dobie, Toyota-Kenya, Cooper Motor Corporation, Isuzu East Africa, and Simba Colt, Mobius, Kenya Vehicle Manufacturers (KVM), Associated Motors (AM) and CMC Holdings were the focus of the attack. The nine automotive businesses were the subject of a census survey directed at managers in the departments of operations management, administration, procurement and supply, risk marketing and finance is based on human resources databases as of 2022.The respondents were managers in these nine who had understanding and experience on automotive industry.

Table 1: Target population

Automotive Firm	Departments	Number of top managers
D T Dobie	Operations management managers	2
	Administration managers	2
	Procurement and supply managers	2
	Risk managers	2
	Marketing managers	2

	Finance managers	2
Toyota -Kenya	Operations management managers	2
	Administration managers	2
	Procurement and supply managers	2
	Risk managers	2
	Marketing managers	2
	Finance managers	2
Cooper Motor Corporation	Operations management managers	2
	Administration managers	2
	Procurement and supply managers	2
	Risk managers	2
	Marketing managers	2
	Finance managers	2
Simba Colt	Operations management managers	2
	Administration managers	2
	Procurement and supply managers	2
	Risk managers	2
	Marketing managers	2
	Finance managers	2
Isuzu East Africa	Operations management managers	2
	Administration managers	2
	Procurement and supply managers	2
	Risk managers	2
	Marketing managers	2
	Finance managers	2
Mobius	Operations management managers	2
	Administration managers	2
	Procurement and supply managers	2
	Risk managers	2
	Marketing managers	2

	Finance managers	2
CMC Holdings	Operations management managers	2
	Administration managers	2
	Procurement and supply managers	2
	Risk managers	2
	Marketing managers	2
	Finance managers	2
Kenya Vehicle Manufacturers (KVM)	Operations management managers	2
	Administration managers	2
	Procurement and supply managers	2
	Risk managers	2
	Marketing managers	2
	Finance managers	2
Associated Motors (AM)	Operations management managers	2
	Administration managers	2
	Procurement and supply managers	2
	Risk managers	2
	Marketing managers	2
	Finance managers	2
Total		108

Sources: ***(****D T Dobie, Toyota-Kenya, Cooper Motor Corporation, Isuzu East Africa, and Simba Colt, Mobius, Kenya Vehicle Manufacturers (KVM), Associated Motors (AM) and CMC Holdings headquarters situated in Nairobi human resources databases 2022)*

The target population for the study were manageable, hence the researcher elected to use the census method. The census approach entails studying the total population and is a statistical enumeration method.

3.4 Data Collection

To gather primary data for the study, a standardized questionnaire with four components was used. The background information of the company as a whole was the primary focus of the first section. The SCRM strategies in Kenya's automotive industry was the focus of Section 2.

Section three was focusing on the issues that result from SC weaknesses in the automotive sector during COVID-19 pandemic and finally section four focused SC performance. The questionnaire were included close ended questions. Through testing utilizing, the closed-ended questions were providing more structured responses. The likert type scale questionnaire to measure how they were affecting SCRM and performance of automotive industry in Kenya during COVID-19 pandemic. The researcher used drop and pick method to correct data. He left the surveys questions at the companies and picked them up two days later.

3.5 Data Analysis

The act of categorizing, arranging, and interpreting the vast amount of information gathered is known as data analysis (Aityan, 2022). It involves reviewing the gathered data and drawing inferences and conclusions from it. To examine the data in this study, descriptive statistics are used. The entire body of information pertaining to the population or sample under examination is gathered and examined using deceptive statistics. The means for each variable was computed when the data has been coded using SPSS software. The results for each variable was totaled and grouped using the means. To tabulate the data for analysis, standard deviation and mean tables were used. To ascertain links between SCRM and the success of Kenya's automotive sector during the epidemic, correlation was used. The researcher utilized correlation analysis to determine the connections between the variables. Then, to determine how the explanatory variables affected the response variable, multiple correlation regression analysis was used. Regression analysis was used:

$$Y= \alpha + \beta 1X1+ \beta 2X2 + \beta 2X3+ \beta 2X4+ \beta 2X5 \varepsilon$$

Where:

Y = Performance of automotive industry

a = constant, b, c, and d, coefficients of X1 and X2, respectively.

X1 = Risk Treatment

X2 = Risk Transfer

X3 = Risk Terminating

X4=Risk Tolerance

X5 = Issues in the automotive sector

ε represents2the2 error2in2the2model

CHAPTER FOUR: DATA ANALYSIS, RESULTS AND DISCUSSION

4.1 Introduction

The investigation's objective was to assess the performance of Kenya's automotive industry and its SCRM strategies during the COVID-19 pandemic. This includes a summary of the study's key findings in accordance with the overarching objectives, data analysis, and conclusions.

4.2 Response Rate

108 questionnaires were given out in all, and 81 of them were correctly filled out and sent back. Within the allotted research period, 75% of the questionnaires were thoroughly completed and returned to the researcher. Some of the regional offices received 25% of the total number of questionnaires, but no responses were received during the response time. This response rate is considered sufficient to cover the costs of the test. According to Aityan (2022), a reaction rate of 50% is considered adequate, while one of more than 70% he says that is considered excellent. This infers that dependent on this declaration, the reaction rate for this situation of 75% is accordingly generally excellent (Aityan 2022). The information assortment methodology utilized might have SRM to this high reaction rate.

4.3 Demographic Characteristics

To ascertain how the Kenyan automotive industry fared in terms of SCRM strategies during the COVID-19 epidemic. It was crucial to ascertain the backgrounds of the respondents, as well as the respondents' firm's age group, size, years of employment, and sales of vehicle units.

4.3.1 Age Bracket of the Automotive Company

The survey was carried out on automotive firms to ascertain the age range of the automotive company. The poll respondents were divided into a number of age groups to achieve this. Table 2 displays the outcomes.

Table 2: Age bracket of the automotive company

age bracket of the automotive company	Frequency	Percent
1-5 years	11	13.6
6-10 years	15	18.5
11-20 years	23	28.4
21years and above	32	39.5
Total	81	100.0

The majority of automotive companies in the automotive industry are above the age of 21 (39.5%), followed by those between the ages of 11 and 20 (28.4%), those between the ages of 6 and 10 (18.5%), and those under the age of 5 (13.6%). The majority of automotive companies, according to the research, were middle-aged, which is a good sign for the company's long-term viability.

4.3.2 Size of the Automotive Companies

One of the goals of the research was to determine the size of the working workforce in the automobile industry. Respondents were provided various size rages and asked to select the one that best reflected the size of their actual working personnel. These are displayed in Table 3.

Table 3: Size of the Automotive Companies

Size of the automotive company	Frequency	Percent
1-50	2	2.5
51-100	14	17.3
101-200	28	34.6
201 and above	37	45.7
Total	81	100.0

201 and above employees were (45 percent), were followed by those with 101-200 (34.6 percent) and those with 51-100, 1-50 (17.3 and 2.5 percent, respectively). In this light, it can be argued that the workers of automotive companies are under staffed and however they were aware of performance of the automotive industry.

4.3.3 Years Working Experience

The duration of respondents' employment working experience with the automotive company was requested of them. Table 4 of the results shows the results.

Table 4: Years Working Experience

Years working experience	Frequency	Percent
Less than 2 years	8	9.9
3-5 years	11	13.6
6-10 years	22	27.2
11 years and above	40	49.4
Total	81	100.0

49.4% of the workforce have been with the company for 11 years or longer, followed by 27.2% who have been there for 6–10 years, 13.6% who have been there for 3–5 years, and 9.9% who

have less than two years of experience. Workers who have worked for the company for a reasonable amount of time and who exhibit a diversity of skills and knowledge may be considered to have been there for a reasonable amount of time.

4.3.4 Sales of Units of Vehicles

From 2020 to 2022, sales of vehicle units were the focus of the study. Table 5 presents the results.

Table 5: Sales of Units of Vehicles

Sales of units of vehicles	Frequency	Percent
0-100	6	7.4
101-500	6	7.4
501-1000	10	12.3
1000-500	32	39.5
Above 5000	27	33.3
Total	81	100.0

Table 5 statistics reveal that 33.3 percent of automotive businesses sold more than 5000 units. 1000-500 (39.5 percent) were the highest number of vehicles that were sold between 2020 and 2022. 501-1000 (12.3 percent), vehicles that were sold 101-500 12.3 percent) vehicles that were sold and finally 0-100 (12.3 percent) vehicles that were sold from 2020 to 2022. According to this findings, the automotive companies they managed to makes sales despite the risk they faced from COVID-19.

4.4 SCRM Strategies

4.4.1 Risk Treatment

Table 6 displays the outcomes of the risk treatment statements from the questionnaire

Table 6: Risk Treatment

Statements	Mean	Std. Deviation
The automotive company had risk is mitigation in place during and after COVID-19 period.	3.0370	1.30809
The automotive company adopted low distributions strategy during and after COVID-19 period.	3.0123	1.45339
The system must deliver data in a timely manner during and after COVID-19 period.	3.2346	1.35344
During COVID-19 period, the automobile company conducted a thorough risk study of SCRM measures.	3.3457	1.44188
The automotive company used residual risk treatment during and after COVID-19 period.	3.1605	1.33657

Majority of respondents highly agreed with the study's findings, that the automotive company performed in-depth risk analysis on SCRM strategies during and after COVID-19 period (mean=3.34; SD=1.44), the system must deliver data in a timely manner during and after COVID-19 period agreed with (mean=3.23; SD=1.35) and that the automotive company used residual risk treatment during and after COVID-19 period were moderate with (mean=3.16; SD=1.34) Further, respondents disagreed that the automotive company adopted low distributions strategy during and after COVID-19 period with (mean= 3.01; SD=1.45). Finally, respondents strongly agreed the automotive company had risk is mitigation in place during and after COVID-19 period (mean= 3.03; SD=1.30). This is an indication that firm in automotive industry should have the automotive company performed in-depth risk analysis on SCRM strategies during and after COVID-19 period.

4.4.2 Risk Transfer

The results are shown in Table 7 show the output of the risk transfer statements from the questionnaire

Table 7: Risk Transfer

Statements	Mean	Std. Deviation
SCM insurance was by used by the automotive company during and after COVID-19 period.	3.1605	1.33657
The automotive company used derivatives to manage SCM during and after COVID-19 period.	3.2346	1.35344
During the COVID-19 the automotive company added additional insured status in risk transfer.	3.0370	1.30809

The following risk transfer factors are shown in Table 7 to have an impact on the performance of the automotive sector. The risk transfer was namely; SCM insurance was by used by the automotive company during and after COVID-19 period; the automotive company used derivatives to manage SCM during and after COVID-19 period and During the COVID-19 the automotive company added additional insured status in risk transfer. The average for each of the aforementioned criteria was higher than 3.0. Meaning they had affected the automotive companies' performance to a large extent. Table 4.4 therefore shows that automotive company in Kenyan market embraced the use of risk transfer in trying to improve/streamline their SC during the period of COVID-19.

4.4.3 Risk Terminating

The results are shown in table 8 are the output of the risk terminating statements from the questionnaire.

Table 8: Risk Terminating

Statements	Mean	Std. Deviation
Automotive company provided indemnification provisions in contracts and leases during and after COVID-19 period.	3.4938	1.42411
The automotive company used modified to make it risk-free in SC during and after COVID-19 period.	3.0370	1.30809
Supply risk adjusted by automotive company during COVID-19 period in by automotive companies	3.2346	1.35344
There is avoiding the production and distribution of units' vehicles during and after COVID-19 period by automotive companies.	3.5556	1.29422
The company used elimination to perform risk terminating during and after COVID-19 period.	3.1605	1.33657

The majority of those polled expressed strong agreement with the study's conclusions that there is avoiding the production and distribution of units' vehicles during and after COVID-19 period by automotive companies. (mean=3.55; SD=1.29), automotive company provided indemnification provisions in contracts and leases during and after COVID-19 period agreed with (mean=3.49; SD=1.42) and that the supply risk adjusted by automotive company during COVID-19 period in by automotive companies were moderate with (mean=3.23; SD=1.35) Further, respondents disagreed that the company used elimination to perform risk terminating during and after COVID-19 period with (mean= 3.16; SD=1.34). Finally, respondents strongly agreed the automotive company used modified to make it risk-free in SC during and after COVID-19 period (mean= 3.04; SD=1.30). This is an indication that there is avoiding the production and distribution of units' vehicles during and after COVID-19 period by automotive companies.

4.4.4 Risk Tolerance

The results are shown in table 9 are the output of the risk tolerance statements from the questionnaire.

Table 9: Risk Tolerance

Statements	Mean	Std. Deviation
Accepting the risk and its consequences by automotive companies is necessary during and after COVID-19 period.	3.4938	1.42411
There is a risk retention component in every contract that an automotive business during and after COVID-19 period.	3.3951	1.42020
The automotive firm in the industry is responsible for including this in RM planning during COVID-19 period.	3.2346	1.35344
Retention of contract risk is represented by every active contract signed in during COVID-19 period	3.3101	1.42020
Risk tolerance often determines the type and amount of investments that an individual chooses in this during COVID-19 period	3.1605	1.33657

Majority of respondents highly agreed with the study's findings that accepting the risk and its consequences by automotive companies is necessary during and after COVID-19 period (mean=3.49; SD=1.42), there is a risk retention component in every contract that an automotive business during and after COVID-19 period agreed with (mean=3.39; SD=1.42) and that retention of contract risk is represented by every active contract signed in during COVID-19 period were moderate with (mean=3.31; SD=1.42) Further, respondents disagreed that the automotive firm in the industry is responsible for including this inRM planning during COVID-19 period with (mean= 3.23; SD=1.35). Finally, respondents strongly agreed risk tolerance often determines the type and amount of investments that an individual chooses in this during COVID-19 period (mean= 3.16; SD=1.34). This is an indication that firm in automotive industry accepting the risk and its consequences by automotive companies is necessary during and after COVID-19 period.

4.5 Weakening Issues in the Automotive Sector

The results are shown in table 10 are the output of the weakening issues in the automotive sector statements from the questionnaire.

Table 10: Weakening Issues in the Automotive Sector

Statements	Mean	Std. Deviation
In the COVID-19 era, the corporation had transport-related difficulties.	3.4938	1.42411
Managing suppliers presented difficulties for the organization during COVID-19.	3.3457	1.44188

During COVID-19, the company encountered difficulties in developing a contingency plan.	3.2346	1.35344
The company faced the challenge of coming up accurately managing of automotive units.	3.1605	1.33657
The company faced difficult in keeping track of the location and condition of their product during COVID-19	3.5556	1.29422

Majority of respondents highly agreed with the study's findings that the company faced difficult in keeping track of the location and condition of their product during COVID-19 (mean=3.56; SD=1.29), in the COVID-19 era, the corporation had transport-related difficulties agreed with (mean=3.49; SD=1.42) and that managing suppliers presented difficulties for the organization during COVID-19 were moderate with (mean=3.35; SD=1.44) Further, respondents disagreed that during COVID-19, the company encountered difficulties in developing a contingency plan with (mean= 3.23; SD=1.35). Finally, respondents strongly agreed the company faced the challenge of coming up accurately managing of automotive units with (mean= 3.16; SD=1.34). This is an indication that firm in automotive industry that the company faced difficult in keeping track of the location and condition of their product during COVID-19.

4.6 Performance of Automotive Industry

The results are shown in table 11 are the output of the performance of automotive industry statements from the questionnaire.

Table 11: Performance of Automotive Industry

	N	Mean	Std. Deviation
There is improve efficiency during COVID-19 era.	81	3.3951	1.42020
There was better customer satisfaction during COVID-19 era.	81	3.2840	1.32509
There is improved operational performance during COVID-19 era.	81	3.5556	1.29422
There is increased organizational effectiveness during COVID-19 era	81	3.8519	1.17379
There is cost savings due to SRM	81	3.4938	1.42411

The following risk transfer factors are shown in Table 11 to the performance of the automotive sector. The performance was namely; there is improve efficiency during COVID-19 era; there was better customer satisfaction during COVID-19 era; there is improved operational performance during COVID-19 era; there is increased organizational effectiveness during

COVID-19 era; there is cost savings due to SRM. All of the above factors had a mean of above 3.0. Meaning they had affected the automotive companies' performance to a large extent.

4.7 Inferential Statistics

In order to test the SCRM strategies and performance of the automotive industry in Kenya during the COVID-19 pandemic, multiple regression was done.

Table 12: Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.963a	.927	.922	.14714

The results in Table 12 indicate that SCRM strategies and performance of the automotive industry in Kenya during the COVID-19 pandemic as shown by R value of 0.963. The R squared of 0.927 shows that the independent variable accounted for 92.7% of the variance on performance of automotive industry. Other factors not included in the study affect Performance of automotive industry by 7.3%

Table 13: ANOVA a

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	20.685	5	4.137	191.087	.000b
	Residual	1.624	75	.022		
	Total	22.309	80			

Using ANOVA, we can see that the model as a whole has enormous size, since the centrality level of 0.000 was considerably below the 5 percent threshold. From F test statistic of $\alpha = 0.05$ with degree of freedom in the df=K-1 in the numerator, thus 6-1=5, and df=n-k in the denominator, thus 81- 6=75 is 1.89. Therefore, since 191.087>1.89, it is clear that the regression model is significant. Therefore, the model is fairly accurate and can be used SCRM strategies and performance of the automotive industry in Kenya during the COVID-19 pandemic.

Table 14: Coefficients

Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.
	B	Std. Error	Beta		
(Constant)	1.140	.092		12.335	.000
Risk Treatment	.730	.095	1.559	7.678	.000
Risk Transfer	.241	.100	-2.928	-12.400	.000
Risk Terminating	.482	.179	2.265	8.269	.000
Risk Tolerance	.748	.044	1.241	16.855	.000
Weakening issues in the automotive sector	.015	.160	-1.682	-6.354	.000

The overall regression model was:

$Y = 1.140 + 0.730\ X_1 + 0.241\ X_2 + 0.482\ X_3 + 0.748\ X_4 + 0.015 X_5$

β1= 0.730 Risk treatment have a positive significant thus it was affecting performance of automotive industry, and with a P-value of 0.000 which is statistically significant as a measure of performance of the automotive industry in Kenya during the COVID-19 pandemic. β2 = 0.241 Risk transfer have a positive significant thus it was affecting performance of automotive industry, and with a P-value of 0.000 which is statistically significant as a measure of performance of the automotive industry in Kenya during the COVID-19 pandemic. β3=0.482 A positive and significant relation with risk terminating with the performance of automotive industry, and P-value of 0. 000. β4= 0.748 indicates a positive significant between Risk tolerance and the performance of automotive industry with a P-value of 0.000. β5 = 0. 015 A positive and significant relation with weakening issues in the automotive with the performance of automotive industry, and P-value of 0. 000.

Because of this, the factors can be used to evaluate how the Kenyan automotive sector performed during the COVID-19 epidemic. These findings show that the association between SCRM tactics and the performance of the automotive industry was favorable and substantial as predicted by the model.

4.8 Discussion of Findings

The study's conclusions, which are based on the data in table 6, indicate that the automobile firm conducted a thorough investigation of the SCRM techniques both during and after the

COVID-19 period. These findings were supported from the study of Yang et al. (2021) who recommended that risk treatment in SC management, locating potential risk sources and putting in place the necessary protections to lessen vulnerability to them through coordinated efforts across chain members is what RM specifically entails. The system was delivering data in a timely manner during and after COVID-19 period hence the automotive company used residual risk treatment during and after COVID-19 period. However, the automotive company were unable to fully adopt low distributions strategy during and after COVID-19 period as well as risk mitigation was not fully in place during and after COVID-19 period. This study was in line with Sheffi, (2021) who was in view that SC experts conduct comprehensive risk assessments at each origin, intermediary point, and transit connection to successfully prevent distribution disruption. She further argued that after they have identified all potential problem areas, they can choose the best way to deploy resources to protect against vulnerabilities. Woong, & Goh (2021) go on to say that susceptibility is further impacted by the number of chain members and degree of connection among them. Due to the intricate relationships between their constituents, SC risks are exceedingly challenging to identify as a result.

The automotive company used SCRM both during and after COVID-19. This section was found by the study to be in line with the study of Ozdemir et al. (2022) who were of the option continued risk transfer in supplier due diligence is necessary, and if constraints are loosened, there will be possibilities to fill gaps brought on by the pandemic. Organizations must be able to fully understand what occurs in relation to risk transfer within SCs. A supplier signing their code of conduct is of little use if they are not also going to audit them to ensure compliance. The automotive company used derivatives to manage SC during and after COVID-19 period and During the COVID-19 the automotive company added additional insured status in risk transfer. Therefore, shows that automotive company in Kenyan market embraced the use of risk transfer in trying to improve/streamline their SC during the period of COVID-19. This study was in line with Huynh, Burggraf, & Nasir, (2020) in their study that recommended that it may be more advantageous for automotive companies in the sector to increase data availability, a key element of RM strategy during and after the COVID-19 pandemic, than to transfer risk to other SC partners.

The study finding from table 8 shows majority of respondents highly agreed with the study's findings that there is avoiding the production and distribution of units' vehicles during and after COVID-19 period by automotive companies. Automotive company provided indemnification

provisions in contracts and leases during and after COVID-19 period agreed and that the supply risk adjusted by Automotive Company during COVID-19 period in by automotive companies were moderate. Further, respondents disagreed that the company used elimination to perform risk terminating during and after COVID-19 period as well as automotive company used modified to make it risk-free in SC during and after COVID-19 period. The results of this component of the study were consistent with McMaster et al (2020) argument that the COVID-19 pandemic has disrupted supply and demand, which has an impact on SC management and operations. This shows that terminating risk is not the only option but the flexibility in SC management needs to be increased in order to lower the risks connected to the pandemic and demand. In order to address this, various RM strategies that firms can apply are discussed, and significant areas for more in SC management and operations. This is an indication that there is avoiding the production and distribution of units' vehicles during and after COVID-19 period by automotive companies. This study's findings were in line with Yu, Umar & Rehman, (2022 they recommended that if an automotive firm engaged in the sector during the COVID -19 outbreak determined that the hazards connected with maintaining the resource's operational status surpassed the advantages of doing so, a server might be removed from a network.

The study finding from table 9 shows Majority of respondents highly agreed with the study's findings that accepting the risk and its consequences by automotive companies is necessary during and after COVID-19 period. In addition, there was a risk retention component in every contract that an automotive business during and after COVID-19 period and that retention of contract risk is represented by every active contract signed in during COVID-19 period were moderate. This finding was similar to that of Van Hoek (2021) results recommended that not only have risk tolerance in pandemic not been reduced at all, but many other types of dangers have also become more serious. SC managers still have a lot of work to do to reduce risks and strengthen SC resilience. Thus, they concluded that for traveling a pathway toward risk mitigation, taking behavioral variables into account is essential in addition to the RM strategies. Further, the automotive firm in the industry was responsible for including RM planning during COVID-19 period. This is an indication that firm in automotive industry accepting the risk and its consequences by automotive companies is necessary during and after COVID-19 period. Therefore, this study's findings was in line with Shah, et al., (2020), they recommended that automotive industry executives may decide that in some circumstances accepting the risk and its consequences as a necessary evil is the best course of action.

The majority of respondents to the study strongly agreed that the company had trouble tracking the location and condition of their product during COVID-19 and that the organization experienced transport-related problems during this time. The subsection of the study findings was similar to that study of Uchehara et al. (2020) who indicated in their study that the emergence of a dynamic trend that is based on contract clause change and is indicative of a sector-wide mitigation strategy in logistics and transportation. Thus the solid foundation is provided by the study's significance for establishing a long-term reaction to any oncoming or unforeseen pandemic in the real estate constructed environment. Further managing suppliers presented difficulties for the organization during COVID-19 and the company encountered difficulties in developing a contingency plan. This is an indication that firm in automotive industry that the company faced difficult in keeping track of the location and condition of their product during COVID-19. Therefore, this study's findings was in line with Schiele, Hoffmann, and Korber (2020) stated that at least 82% of firms experienced significant problems monitoring their end-to-end SCs in the previous year.

CHAPTER FIVE: SUMMARY, CONCLUSION AND RECOMMENDATIONS

5.1 Introduction

The data, conclusions, and suggestions drawn from the study's findings are summarized in this chapter. The ramifications of the findings and suggested areas for further research are also highlighted.

5.2 Summary

During and after COVID-19, the automotive company conducted thorough risk analyses of SCRM techniques. The automotive company implemented residual risk treatment during and after the COVID-19 period because the system was delivering data in a timely manner at the time. In addition, the automotive company employed SCRM both before and after COVID-19. The automotive company added additional insured status in risk transfer during COVID-19 and employed derivatives to control SCM during and after COVID-19. This demonstrates that throughout the period of COVID-19, automotive companies operating in the Kenyan market actively used the practice of risk transfer. Equally, the automotive company consented to indemnification clauses in contracts and leases during and after the COVID-19 period, and the supply risk adjustments made by the automotive industry during this time were of a mild nature. Respondents further disputed with the claims that the corporation eliminated risks during and after the COVID-19 period and adjusted its SC to eliminate risks during and after the COVID-19 period. This suggests that automotive manufacturers are delaying the production and delivery of units of vehicles during and after COVID-19. SC managers still have a lot of work to do to reduce risks and strengthen SC resilience. Thus, they concluded that for traveling a pathway toward risk mitigation, taking behavioral variables into account is essential in addition to the RM strategies. Finally, the company encountered challenges tracking the whereabouts and quality of its goods during COVID-19, as well as transportation-related issues throughout this time. During COVID-19, managing suppliers further caused challenges for the organization, and the business had trouble coming up with a backup plan. Similar the emergence of a dynamic trend that is based on contract clause change and is indicative of a sector-wide mitigation strategy in logistics and transportation. This is evidence that a corporation in the automotive sector had trouble tracking the location and condition of their goods during COVID-19. Companies that source goods or services must regularly assess the financial stability of their suppliers and take into account their own resilience in the event that

one. More of these vital suppliers fail or refuse to provide, for example if their own government restricts export as we saw in the pandemic scenario.

5.3 Conclusion

The study concluded that the automotive company in Kenya had added additional insured status in risk transfer during COVID-19 and employed derivatives to control SCM during and after COVID-19. This demonstrates that throughout the period of COVID-19, automotive companies operating in the Kenyan market actively used the practice of risk transfer. However, during and after COVID-19, the automotive firm was unable to fully implement the low distributions plan, and risk mitigation was not entirely implemented. In addition, the automotive company employed SCM insurance both before and after COVID-19. Also, the company encountered challenges tracking the whereabouts and quality of its goods during COVID-19, as well as transportation-related issues throughout this time.

5.4 Recommendations

Following the findings and recommendations of the study, automakers may put into practice a number of recommendations targeted at improving the robustness of SCRM techniques in the post-COVID-19 era. The study's managerial implications and recommendations are listed below;

The study recommends automotive firms in Kenya should build effective resilience of SCRM strategies both during and beyond the COVID-19 period in order to have SCRM strategies and performance of the automotive industry in Kenya. The automakers must embrace the risk and its repercussions. Additionally, automotive industry in Kenya should include a risk retention element in each contract that an automotive business signed during and after the COVID-19 period as well of try to have a dynamic resilience of SCRM strategies in post COVID-19. Finally, the Kenyan automotive firms should be in charge of including RM planning for the COVID-19 term. This is a sign that companies in the automotive industry must accept the risk and its repercussions during and after the COVID-19 period. Finally, the study recommends automotive firms to use update technology in the field of SC management that will enable them to solve the challenges tracking the whereabouts and quality of its goods during COVID-19, as well as transportation and logistics-related issues throughout this time.

5.5 Suggestions for Further Research

The automotive industry in Kenya performed well during the COVID-19 epidemic, but more study is urgently needed on additional aspects that affect customer loyalty that might be employed in conjunction with SCRM measures. Since they are also involved in the automotive performance market, an automotive company should conduct a study akin to this one to determine how SCRM strategies affect client happiness and loyalty.

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APPENDIXES

APENDIX A: DATA COLLECTION LETTERS

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Our Ref: **D67/39448/2021** November 8, 2022

TO WHOM IT MAY CONCERN

RE: INTRODUCTION LETTER: MUCHIRI DENIS NGATIA

The aforementioned person is enrolled as a Master of Science in SC Management student at the University of Nairobi's Faculty of Business and Management Sciences. His current area of study is ***"Supply Chain Risk Management strategies and performance of Automotive Industry in Kenya during COVID-19 pandemic."***

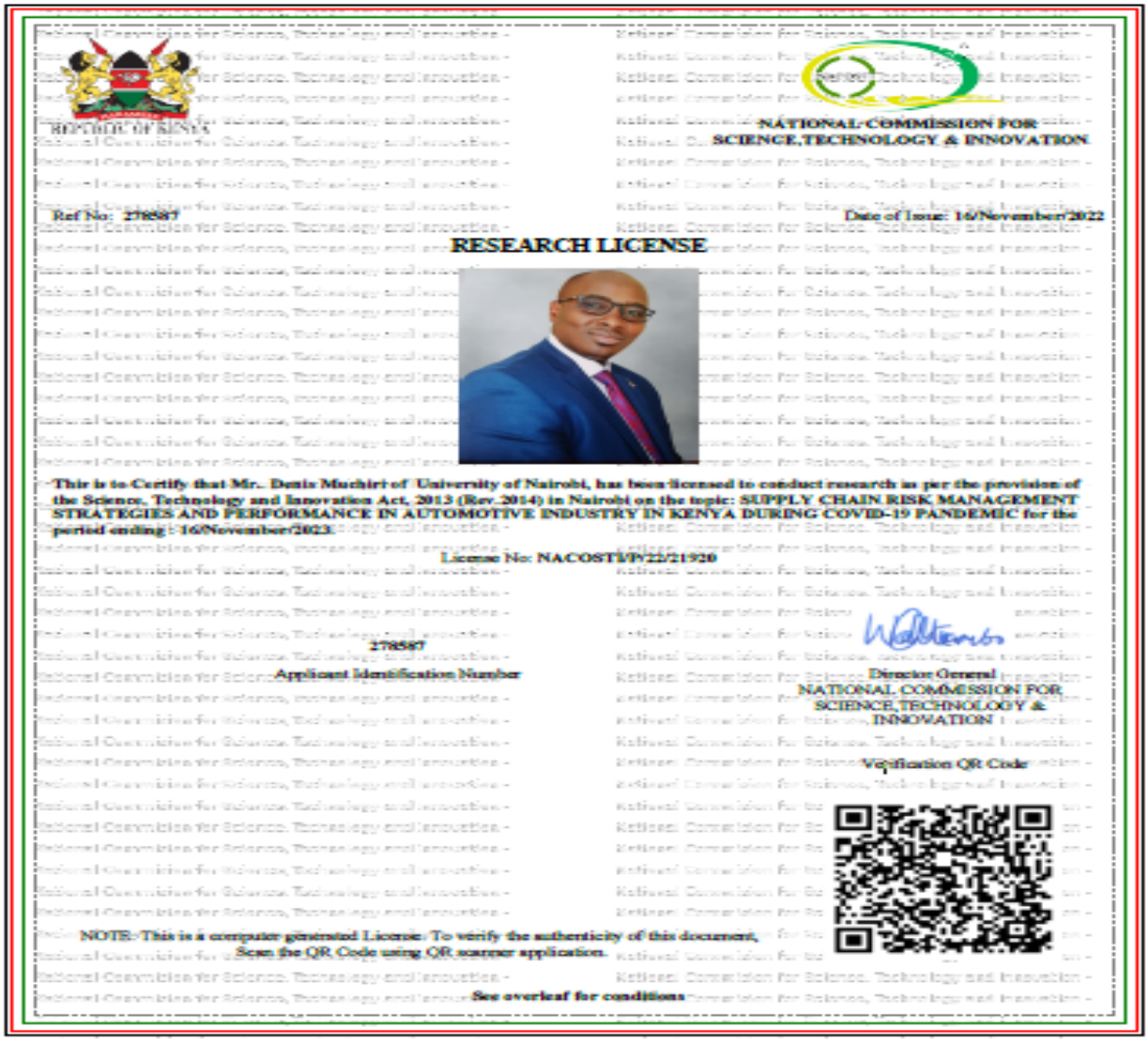
This letter's goal is to respectfully ask you for help in providing the student with the information they need to complete their project.

The necessary information and data will be handled in strict confidence and will only be used for academic reasons.

Your assistance will be much valued.

PHILIP MUKOLA (MR.)

FOR: ASSOCIATE DEAN,
FACULTY OF BUSINESS AND MANAGEMENT SCIENCES
PM/fmi



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The National Commission for Science, Technology and Innovation, under the Science, Technology and Innovation Act 2013 (Revised 2014), hereinafter referred to as the Act, the Commission, was created. The Commission's mandate is to oversee the quality of the science, technology, and innovation sector and provide advice to the government on problems relating to it.

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2. The research and its related activities as well as outcomes shall be beneficial to the country and shall not in any way;

    I. Put national security in peril.
    II. Negatively impact Kenyans' quality of life.
    III. Violate Kenya's responsibilities under the Comprehensive Nuclear-Test-Ban Treaty Organization (CTBTO), the Biological Weapons Convention (BWC), and other international treaties (CBRN).
    IV. Lead to the exploitation of Kenyan communities' intellectual property rights
    V. Negatively impact the environment
    VI. Negatively impact community rights.
    VII. Put national unity and public safety in peril.
    VIII. Plagiarise the work of another person

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APENDIX B: QUESTIONNAIRE

"SCRM strategies and performance of the automotive industry in Kenya during the COVID-19 pandemic" is the topic of the research project. Please answer the question by checking the appropriate boxes next to the given blanks. The supplied information will be held in the strictest confidence and will only be used for academic purposes.

INSTRUCTIONS

PART A: DEMOGRAPHIC DATA OF RESPONDENTS

1. Age bracket of the firm (please tick as appropriate)

   1-5 years ( ) 6-10 years ( )

   11-20 years ( ) 21years and above ( )

2. Indicate size of the firm (please tick as appropriate)

   1-50 ( )

   51-100 ( )

   101-200 ( )

   201 and above ( )

3. Number of years working experience:

   Less than 2 years ( )

   3-5 years ( )

   6-10 years ( )

   11 years and above ( )

4. Number of Sales of units of vehicles from 2020 to 2022

   0-100 ( )

   101-500 ( )

   501-1000 ( )

   1000-500 ( )

   Above 5000 ( )

PART B

1. **PART I: SCRM strategies**

Please select your response by checking a range from 1 to 5 the extent to which SCRM strategies affects performance of automotive industry indicated by the statement.

Key 1=Strongly disagree, 2=Disagree, 3= Neutral, 4=Agree and 5=Strongly agree

Variables	**Items**	**Agreement scales**				
		SD	**D**	**U**	**A**	**SA**
	Statement	**1**	**2**	**3**	**4**	**5**
Risk Treatment	The automotive company had risk is mitigation in place during and after COVID-19 period.					
	The automotive company adopted low Distributions strategy during and after COVID-19 period.					
	The system must deliver data in a timely manner during and after COVID-19 period.					
	The automotive company performed in-depth risk analysis on SCRM strategies during and after COVID-19 period.					
	The automotive company used residual risk treatment during and after COVID-19 period.					
Risk Transfer	SCM insurance was by used by the automotive company during and after COVID-19 period.					
	The automotive company used derivatives to manage SCM during and after COVID-19 period.					
	During the COVID-19 the automotive company added additional insured status in risk transfer.					
Risk Terminating	Automotive company provided indemnification provisions in contracts and leases during and after COVID-19 period.					
	The automotive company used modified to make it risk-free in SC during and after COVID-19 period.					
	Supply risk adjusted by automotive company during COVID-19 period in by automotive companies					

	There is avoiding the production and distribution of units' vehicles during and after COVID-19 period by automotive companies.					
	The company used elimination to perform risk terminating during and after COVID-19 period.					
Risk Tolerance	Accepting the risk and its consequences by automotive companies is necessary during and after COVID-19 period.					
	There is a risk retention component in every contract that an automotive business during and after COVID-19 period.					
	The automotive firm in the industry is responsible for including this inRM planning during COVID-19 period.					
	Retention of contract risk is represented by every active contract signed in during COVID-19 period					
	Risk tolerance often determines the type and amount of investments that an individual chooses in this during COVID-19 period					

2. Weakening issues s in the automotive sector

Please select your response by checking a range from 1 to 5 the extent to which weakening issues affects performance of automotive industry as indicated by the statement.

Key 1=Strongly disagree, 2=Disagree, 3= Neutral, 4=Agree and 5=Strongly agree

Variable	**Items**	**Agreement scales**				
		SD	**D**	**U**	**A**	**SA**
	Statement	**1**	**2**	**3**	**4**	**5**
Weakening issues s in the automotive sector	In the COVID-19 era, the corporation had transport-related difficulties.					
	Managing suppliers presented difficulties for the organization during COVID-19.					
	During COVID-19, the company encountered difficulties in developing a contingency plan.					

	The company faced the challenge of coming up accurately managing of automotive units.					
	The company faced difficult in keeping track of the location and condition of their product during COVID-19					

3. Performance of automotive industry

Please select your response by checking a range from 1 to 5 the extent to which Performance of automotive industry as indicated by the statement.

Key 1=Strongly disagree, 2=Disagree, 3= Neutral, 4=Agree and 5=Strongly agree

Variable	**Items**	**Agreement scales**				
		SD	**D**	**U**	**A**	**SA**
	Statement	**1**	**2**	**3**	**4**	**5**
Performance of automotive industry	There is is improve efficiency during COVID-19 era.					
	There was better customer satisfaction during COVID-19 era.					
	There is improved operational performance during COVID-19 era.					
	There is increased organizational effectiveness during COVID-19 era					
	There is cost savings due to supply risk management.					