

Research Title

**Enhancing Risk Management through Facilities Management: A Case Study on COVID-19  
Response in SABIC Industrial Organization**

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Academic Year  
2025

العنوان

تعزيز إدارة المخاطر من خلال إدارة المرافق: دراسة حالة لاستجابة شركة سابك الصناعية لجائحة كوفيد-19

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2025

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This work has been submitted in partial fulfillment of the requirements for the degree of **Master of Risk Management**

## الملخص

هدفت هذه الدراسة إلى استقصاء دور إدارة المرافق في تعزيز إدارة المخاطر داخل المنظمة الصناعية لشركة سابك خلال جائحة كوفيد-19. ولتحقيق هذا الهدف، تم اعتماد منهج وصفي تحليلي كمي، بالاعتماد على استبيان منظم كأداة رئيسية لجمع البيانات. وقد صُمم الاستبيان لاستقصاء آراء الموظفين العاملين في سابك بشأن دور إدارة المرافق في دعم المرونة التشغيلية، وإدارة الصحة والسلامة، واستمرارية تقديم الخدمات، والتخفيف من المخاطر بشكل عام خلال فترة الجائحة. تكونت عينة الدراسة من 148 موظفًا يمثلون مستويات وظيفية ومواقع عمل وخبرات مهنية متنوعة، بما يضمن شمولية الرؤية التشغيلية. أظهرت النتائج أن إدارة المرافق لعبت دورًا محوريًا وفعالًا في دعم إدارة المخاطر طوال فترة الجائحة. كما كشفت النتائج عن وجود علاقات ذات دلالة إحصائية بين ممارسات إدارة المخاطر المحسنة ومساهمة إدارة المرافق في المرونة التشغيلية، وبروتوكولات السلامة والأمن، واستمرارية الخدمات الأساسية. وتشير هذه النتائج إلى أن استراتيجيات إدارة المخاطر الاستباقية، عند دمجها ضمن عمليات إدارة المرافق، أسهمت بشكل مباشر في تعزيز الاستجابة للطوارئ، وضمان سلامة الموظفين، وتقليل الاضطرابات التشغيلية، والحفاظ على الخدمات الحيوية أثناء الأزمات. وبناءً على هذه النتائج، قدمت الدراسة عدة توصيات رئيسية، من بينها: الدمج الرسمي لأطر إدارة المخاطر ضمن عمليات إدارة المرافق، وتنفيذ برامج تدريب مستمرة في مجالي الاستعداد للأزمات والمرونة التشغيلية، وتعزيز بروتوكولات الصحة والسلامة وفقًا لأفضل الممارسات العالمية والتقنيات الذكية، وتطوير خطة شاملة لاستمرارية الأعمال، وتوثيق الدروس المستفادة من جائحة كوفيد-19، واعتماد أدوات رقمية لإدارة المرافق لرصد المخاطر في الوقت الفعلي، وتعزيز ثقافة تنظيمية قوية قائمة على المرونة.

**الكلمات المفتاحية:** إدارة المخاطر، إدارة المرافق، كوفيد-19، المنظمة الصناعية لشركة سابك

## **Abstract**

This study aimed to examine the role of Facilities Management (FM) in enhancing risk management within SABIC Industrial Organization during the COVID-19 pandemic. To achieve this objective, a quantitative descriptive-analytical method was adopted, relying on a structured questionnaire as the primary data collection tool. The questionnaire was designed to gather employee insights regarding the role of FM in operational resilience, health and safety management, service continuity, and overall risk mitigation during the pandemic. The study sample consisted of 148 employees representing various job levels, work sites, and years of experience, ensuring a comprehensive range of operational perspectives. The findings revealed that FM played a significant and highly effective role in supporting risk management throughout the pandemic. Results indicated statistically significant relationships between improved risk management practices and FM's contribution to operational resilience, safety and security protocols, and continuity of essential services. These findings suggest that proactive risk management strategies, when integrated into FM operations, directly contributed to enhancing emergency response, ensuring employee safety, minimizing operational disruptions, and maintaining critical services under crisis conditions. Based on these findings, the study proposed several key recommendations, including the formal integration of risk management frameworks into FM processes, continuous training in crisis preparedness and operational resilience, ongoing enhancement of health and safety protocols through global best practices and smart technologies, the development of a comprehensive business continuity plan, proper documentation of lessons learned from the COVID-19 pandemic, adoption of digital FM tools for real-time risk monitoring, and promotion of a strong organizational culture of resilience.

**Keywords:** Risk Management, Facilities Management, COVID-19, SABIC Industrial

## **Acknowledgment**

I would like to express my sincere gratitude to all faculty members of Midocean University – College of Management for their valuable guidance, support, and knowledge throughout my academic journey. Their continuous encouragement played a significant role in shaping my academic and research skills.

My heartfelt thanks also go to the esteemed panel of evaluators and examiners whose insightful feedback and constructive comments greatly enriched the quality of this research.

I am equally grateful to everyone who supported me in any way—academically, professionally, or emotionally—throughout the process of completing this study. May success and blessings follow them always.

## Contents

|                                                   |    |
|---------------------------------------------------|----|
| Abstract .....                                    | ii |
| Chapter 1: Introduction .....                     | 4  |
| Introduction .....                                | 4  |
| Research problem .....                            | 6  |
| Research Questions .....                          | 7  |
| Research significant .....                        | 8  |
| Research Objectives .....                         | 9  |
| Research Hypothesis .....                         | 10 |
| Theoretical Premises of the Study .....           | 10 |
| Chapter 2: Previous studies .....                 | 13 |
| Chapter 3: Research Methodology and Methods ..... | 19 |
| 1. Research Method .....                          | 20 |
| 2. Study Population and Sample .....              | 20 |
| 3. Data Collection Tool .....                     | 20 |
| 4. Statistical Analysis Methods .....             | 20 |
| 5. Study Boundaries .....                         | 21 |
| Chapter 4: Results and Recommendations .....      | 22 |
| Demographic Data .....                            | 23 |
| Survey Sections .....                             | 26 |
| Hypotheses Validation .....                       | 40 |
| Results .....                                     | 55 |

## Tables

|                                                                                             |           |
|---------------------------------------------------------------------------------------------|-----------|
| <b>Table 1 Gender Distribution .....</b>                                                    | <b>23</b> |
| <b>Table 2 Age Group Distribution .....</b>                                                 | <b>23</b> |
| <b>Table 3 Educational Qualification Distribution .....</b>                                 | <b>24</b> |
| <b>Table 4 Work Experience Distribution.....</b>                                            | <b>25</b> |
| <b>Table 5 Work Location Type Distribution .....</b>                                        | <b>25</b> |
| <b>Table 6 Operational Adaptability of Facilities Management .....</b>                      | <b>26</b> |
| <b>Table 7 Management of Health, Safety, and Security within Facilities Management.....</b> | <b>29</b> |
| <b>Table 8 The Continuity of Services Rendered by Facilities Management .....</b>           | <b>33</b> |
| <b>Table 9 Enhancement of Risk Management .....</b>                                         | <b>36</b> |
| <b>Table 10 Validation of the First Hypothesis .....</b>                                    | <b>40</b> |
| <b>Table 11 Validation of the First Hypothesis .....</b>                                    | <b>44</b> |
| <b>Table 12 Validation of the second Hypothesis .....</b>                                   | <b>47</b> |
| <b>Table 13 Validation of the Third Hypothesis.....</b>                                     | <b>51</b> |

## **Chapter 1: Introduction**

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### **Introduction**

Right now, during a period in which recessionary phenomena are becoming even more severe, managerial activity needs new progressive ways and processes that would assist in minimizing the adverse impact that known risk variables have on the operation and development of firms. At the same time, the availability of a system that would assist in ensuring that they are protected from hazards is a factor that is related to their ability to achieve effective performance and sustainable development. A mechanism of this kind may be an efficient risk management system that is based on the most recent techniques for improving the quality of risk management in an organization. This form of mechanism would be called a prospective mechanism (Cherkasov, 2017). The extent to which risk influences the performance of an organization is contingent upon several different internal and external environmental elements respectively (Agamirova et al, 2017). What makes the requirement for professional crisis management even more important is the fact that this is the case. To put it another way, it is essential to understand what risk is, how to correctly evaluate its magnitude and prevent the harm that it may cause, how to effectively manage risk, and how to establish a system that provides protection against hazards.

The importance of establishing a well-structured and independent risk management system within an organization is a topic that requires little to no evidence to be substantiated. This is especially true considering the current economic downturn that is occurring within the industrial sector (Dudinskaya, 2016). It is possible that the organization will eventually run into some significant difficulties because of the absence of an efficient risk management system, it is possible that a particular risk that was underestimated could develop into a structural risk, which would then cause considerable damage to the entire organization (Eliseeva, 2016). However, it is important to recognize that it is impossible to totally avoid risk within the production sphere. As a result, a reasonable objective in the risk management process of most firms is not to completely avoid hazards but rather to attempt to restrict and reduce the impact that they have (MARKOVA, 2018)

According to Cocchiara (2020), the workplace was in a state of perpetual change because of the transformation that Covid-19 had brought about in the workplace. According to NST Business's 2020 report, flexible working is inextricably linked to the concept of flexible workspace. The authors Davidescu et al. (2020) emphasized that job flexibility should be considered "business as usual" and should not be viewed as something that may be utilized only during times of crisis.

Employees will still choose to return to the workplace, even if they continue to work remotely, even though working remotely will become more common in the future, particularly during the height of the Covid-19 (Gallup, 2020) survey. During that time, the workplace will become more complex and dynamic, and employees will be divided into two teams: one that is located on-site, and another that is distributed. According to Jones Lang LaSalle (JLL), 2020, the implementation of FWA will become the norm in the workplace, which will influence the appearance and atmosphere of the office for Covid-19. Therefore, the current workplace needs to be modified so that it is more flexible and adaptive to accommodate the hybrid workforce and dynamic so that it can allow the practice of working remotely during and after the COVID-19 conference.

According to the FM point of view, FWA has prompted FM to innovate to facilitate the incorporation of flexible working arrangement norms and procedures within the premises of corporate enterprises. FM is also responsible for preparing the working environment in a manner that is in accordance with the policies and Standard Operating Procedures (SOP) of the Covid-19 organization while also catering to the requirements of the users. As a result of the, FM needs to determine what modifications or enhancements are necessary to guarantee that the workplace is prepared for the implementation of FWA during COVID-19. This must be done before all workers return to their workplaces and to enable a speedy resume of company operations (JLL, 2020). This study intends to investigate the essential components that facilitate FWA, as well as the concerns and obstacles that arose throughout the process of preparing the workplace for FWA during the COVID-19 conference, and to make recommendations about a more effective approach to the implementation of FWA in the workplace. It was claimed by Ciarniene et al. (2018) that FWA is a strategic strategy that firms can take to cut expenses and successfully deal with a variety of

demands, while simultaneously providing additional value to both the organizations and the employees of those organizations.

Thus, in recent years, the global community has faced extraordinary health and economic adversities as a direct result of the widespread outbreak of the COVID-19 pandemic, an unprecedented event that has significantly impacted numerous productive and service-oriented sectors, forcing various institutions to implement adaptable policies and methodologies to effectively manage crises and their associated risks. Facilities Management has become an essential part of business continuity by creating and maintaining a safe working environment that follows precautionary measures and meeting the changing needs of the business landscape during crises. Considering this situation, the present research undertakes a thorough examination of the critical significance of enhancing risk management strategies through the lens of facility management, specifically through a detailed case study focused on the response of SABIC Industrial Company to the challenges posed by the COVID-19 pandemic. The primary objective of this study is to elucidate the essential role that SABIC's facilities management played during the tumultuous period of the pandemic, as well as to identify the most significant elements and obstacles that accompanied the implementation of flexible work arrangements, which became increasingly necessary in response to the rapidly changing circumstances. Furthermore, this research aims to provide practical recommendations that could significantly contribute to the advancement and refinement of risk management policies within industrial enterprises in the future, thereby ensuring that they are better equipped to navigate potential challenges and uncertainties that may arise in subsequent crises.

## **Research problem**

As a result of the unprecedented global Covid-19 pandemic, which has effectively exposed and underscored significant deficiencies in the existing infrastructure, emergency response systems, and crisis management frameworks that govern operations within various industrial facilities, industrial enterprises are facing an increasing number of challenges related to risk management. One of the most important elements in supporting risk management strategies is facility management, which is essential for maintaining business operations, providing a safe workplace for workers, and reducing the negative effects of emergencies on people, property, and manufacturing processes.

Given this urgent situation, it is now essential to greatly improve the integration of risk management procedures with facilities management as a highly successful strategic approach to raise the degree of institutional readiness and enable a prompt and effective response to crises as they occur. Because SABIC is one of the most well-known and significant industrial companies in Saudi Arabia and the surrounding region, the main goal of this study is to examine how facilities management practices can be used to improve and enhance risk management procedures in industrial settings. To do this, the case study of SABIC and its response to the COVID-19 pandemic will be carefully examined.

Inquiring about how well facilities management supports and promotes different risk management activities during emergency health crises and evaluating how well SABIC has integrated practices that bridge the gap between facilities management and risk management during the turbulent COVID-19 crisis are the main issues this study aims to address. Additionally, this study aims to identify the various difficulties the company faced in managing the pandemic's complexities and assess how these difficulties affected important elements like workforce safety, business continuity, and the smooth running of production processes.

To achieve effective prevention measures, improve the speed and efficacy of response actions, minimize potential losses, and support a swift recovery process after the crisis has been resolved, industrial enterprises must adopt flexible and adaptive management models that emphasize integration among their diverse departments in the face of crises. This identified problem starkly reflects the urgent need for these models.

Hence, the problem of the study lies in answering the following main question: What is the function of Facility Management in augmenting risk management at SABIC during the COVID-19 pandemic?

## **Research Questions**

A pivotal Question

- What is the function of Facility Management in augmenting risk management at SABIC during the COVID-19 pandemic?

## Auxiliary Questions

- What is the effect of the operational adaptability of facility management on enhancing risk management at SABIC during the COVID-19 pandemic?
- How does the Health, Safety and Security Department within Facility Management contribute to mitigating risks during a crisis?
- To what extent does the continuity of services render by Facility Management influence risk management support and business continuity in SABIC?

## Research significant

### Scientific Importance

The significance of this study within the realm of scientific inquiry is underscored by its concentrated examination of a contemporary topic that is intricately intertwined with the pressing realities of modern crises, particularly focusing on the integrated relationship that exists between risk management and facility management within the context of industrial enterprises during health crises, such as the unprecedented Covid-19 pandemic. Through its investigation, this study aspires to enrich the theoretical discourse present in both Arab and international literature pertaining to this particular field by illuminating the potential of employing facilities management as a supportive and ancillary component that bolsters risk management activities within industrial enterprises, a subject that has regrettably not garnered adequate attention in prior research endeavors. Moreover, the scientific relevance of the study is further accentuated by its deliberate selection of SABIC as a case study, which stands out as one of the foremost industrial corporations both regionally and globally, thereby imparting a substantial scientific dimension to the findings of this research that can subsequently be leveraged to cultivate innovative management models and theoretical frameworks aimed at enhancing the capabilities of institutions to effectively confront crises and adeptly manage risks in an integrated and scientifically informed manner, grounded in actual operational practices. Consequently, the study endeavors to address a significant lacuna in the existing body of research, which has demonstrated a notable scarcity of investigations that have explored facilities management as an efficacious instrument for the management of crises and risks within industrial facilities.

## Practical Importance

From a practical standpoint, the significance of this study is manifested through its provision of actionable recommendations and pragmatic solutions that industrial enterprises are able to adopt in order to enhance their emergency systems, respond adeptly to crises, ensure the continuity of their operations, and mitigate both human and material losses that may arise during such challenging times. The study meticulously reviews a realistic and empirical experience of SABIC during the tumultuous COVID-19 pandemic, elucidating the specific procedures and measures that the company has implemented in managing its logistics facilities and services in a manner that is cohesively integrated with risk management practices. In addition, this study makes a notable contribution by offering a practical guide that can be utilized by other industrial enterprises not only within Saudi Arabia but also internationally, particularly those that encounter analogous challenges concerning employee safety, the continuity of supply chains, and the minimization of production disruptions in the face of crises. The practical importance of this research is also emphasized by its potential to support decision-makers and managers within facilities and risk departments of industrial enterprises by furnishing them with an integrated framework that is designed to assist in the development of proactive and adaptable plans, thereby enabling them to effectively navigate future crises, all in alignment with the strategic objectives outlined in the Kingdom's Vision 2030, which aims to establish resilient and productive institutions capable of efficiently and effectively responding to emergency changes.

## Research Objectives

The principal objective

- Investigating the function of facilities management in enhancing risk management in SABIC during the COVID-19 pandemic.

Sub-objectives

- To ascertain the impact of facility management operational adaptability in enhancing risk management at SABIC during the pandemic.

- Analyzing the contribution of the Health, Safety and Security Department within Facility Management to the mitigation of risks during the COVID-19 crisis.
- Evaluating the role of the continuity of services rendered by Facility Management in bolstering risk management and business continuity in SABIC.

## **Research Hypothesis**

A principal hypothesis

- There exists a statistically significant correlation between facility management and enhanced risk management at SABIC during the COVID-19 pandemic.

Sub hypotheses

- H1: There exists a statistically significant correlation between the operational adaptability of facility management and the enhancement of risk management at SABIC during the COVID-19 pandemic.
- H2: There exists a statistically significant correlation between the management of health, safety, and security within facilities management and the enhancement of risk management in SABIC.
- H3: There exists a statistically significant correlation between the continuity of services rendered by facilities management and the enhancement of risk management in SABIC during the crisis.

## **Theoretical Premises of the Study**

### **Risk Management Theory.**

The theory of risk management emerges as a fundamental and indispensable pillar of this comprehensive study, as is primarily concerned with the systematic identification of the myriad risks that encircle institutions, followed by a rigorous analysis of these risks and an evaluation of their potential impacts, culminating in the formulation of appropriate and effective strategies aimed at managing and mitigating these identified risks. This theoretical perspective asserts that industrial enterprises are invariably confronted with a plethora of risks within their operational environment, encompassing various dimensions such as operational, environmental, health-related, and security risks; thus, necessitating the development of comprehensive and strategic plans to effectively

manage these risks. In this regard, it becomes increasingly vital to forge a synergistic integration between facility management and risk management, given that the former serves as a pivotal supporting element in the implementation of emergency response plans and in the maintenance of a sustainable and safe operational environment. Furthermore, the theory posits that the efficacy of risk management is predominantly contingent upon the degree of coordination and collaboration that exists among the various departments within the organization. This aspect is critically examined within the context of this study, particularly in relation to SABIC's experiential insights garnered during the tumultuous COVID-19 crisis( Nocco, 2022)

### **Organizational Resilience Theory.**

The organizational resilience theory represents one of the essential and influential theoretical constructs that can be effectively harnessed in the context of this study, as it centers its focus on the inherent capacity of institutions to adapt and respond to extraordinary circumstances and unforeseen crises, thereby ensuring the continuity of business operations while simultaneously mitigating the adverse effects that may arise as a result of such crises. The theoretical underpinnings suggest that institutions that embrace and implement a flexible and adaptive management structure—capable of fostering coordination and collaboration among their diverse departments, including both facilities management and risk management, are demonstrably better equipped to confront sudden crises and navigate the inherent fluctuations that may occur within their operational landscape. From this analytical perspective, the organizational resilience theory serves as a pertinent framework for elucidating the vital role played by SABIC's facilities management in enhancing the organization's overall resilience throughout the duration of the COVID-19 pandemic, whether through the provision of a safe and secure work environment or by ensuring the sustainability of operational services that are integral to the continuity of production processes (Xie, 2022).

### **Business Continuity Management Theory.**

The theory of business continuity management underscores the critical importance of devising and implementing robust and meticulously structured plans to effectively address potential crises and disasters, all while ensuring the uninterrupted continuation of the organization's core operations and minimizing any disruptions to production or service delivery. This theoretical framework posits that organizations which possess comprehensive and integrated

plans—specifically those that delineate distinct roles and responsibilities for facility management—are demonstrably more adept at navigating crises and maintaining a safe, efficient, and effective operating environment. In this context, the role of facility management emerges as a central and pivotal element within the overarching business continuity plan, given its significant contributions to the provision of essential cleaning and sterilization services, the maintenance of critical infrastructure, and the assurance of a safe and compliant work environment during pronounced health crises. This theoretical perspective significantly enriches the study by facilitating a nuanced analysis of the measures undertaken by SABIC in managing its facilities in a manner that is fully integrated with its overarching business continuity plans throughout the challenging period marked by the COVID-19 crisis (Graham& Loke, 2022).

### **Integrated Facilities Management Model.**

The integrated facilities management model represents a contemporary and sophisticated organizational and administrative paradigm that is fundamentally predicated upon the essential principle of orchestrating all utility services within the organizational structure, which encompasses a diverse array of functions including, but not limited to, maintenance, security, cleaning, and logistics services, all of which must be meticulously aligned with the overarching operational and administrative exigencies of the organization, particularly in times of crisis when such coordination is of paramount importance. This model posits that facilities management transcends the limitations of traditional roles, extending its influence to actively enhance and bolster the implementation of crisis management strategies and the assurance of business continuity, thereby playing a critical role in the overall resilience of the organization. Furthermore, the model substantiates the assertion that the synergistic integration of utility services significantly amplifies the operational efficiency of the institution during periods of crisis, while simultaneously serving to diminish the response time to emergent risks and challenges. In this context, the model serves as a valuable analytical framework for investigating how SABIC's integrated facilities management practices contribute to the formulation and execution of strategies aimed at addressing the multifaceted challenges posed by the COVID-19 pandemic, while also ensuring the sustainable continuity of operational services throughout this unprecedented global health crisis (Mannino, 2021)

## **Chapter 2: Previous studies**

## **Chapter 2: Previous studies**

A study by (Sekak et al, 2024) entitled” LESSONS LEARNED FROM COVID-19 PANDEMICS IN MALAYSIA'S FACILITIES MANAGEMENT ORGANISATION” Under the circumstances of the COVID-19 pandemic, the construction industry is required to take a strong response. As more and more people become aware of the virus's ability to spread, there has been a growing demand for quality improvement across a variety of industries. Facilities Management (FM) is tasked with the primary responsibility of ensuring that the constructed surroundings are productive, comfortable, secure, and environmentally friendly. Additionally, FM is responsible for ensuring that the environment is protected. Within the scope of this study, we intend to investigate the lessons that were learned from the measures that FM organizations put into place during the COVID-19 epidemic. Specifically, a quantitative technique approach is utilized in this research. A total of 317 FM companies in Selangor were given questionnaires, and 36% of them responded to provide their information. For the duration of the pandemic, most facilities managers were found to have a comprehensive understanding of FM organization management, according to the findings. To handle future pandemics and disruptions, it is of the utmost necessity to thoroughly determine the lessons acquired in FM during the COVID-19 pandemic and to proactively equip and strategize themselves to deal with them. This may be accomplished by fostering the capacity and resilience to adapt to environmental shocks. It is of the utmost importance to put the plan into action since it will serve as a guiding principle for actions that will be taken in the future. An industry proposition for a fair and impartial method to managing future pandemics in Malaysia has been shaped because of the effort and the information learned from previous pandemics.

A study by (Aladayleh , 2023)entitled” Global trends of the research on COVID-19 risks effect in sustainable facility management fields: A bibliometric analysis “In this study, bibliometric analysis was utilized to analyze global research trends about the impact of COVID-19 threats in the disciplines of sustainable facility management. A total of 208 publications concerning the impact of COVID-19 threats on sustainable facility control fields were published in the Scopus database between the years 2019 and 2021. To analyze the co-occurrence of all keywords, the VOS viewer software was utilized, and the Bibliophagy software was utilized to help obtain the connection that was the most pertinent by utilizing the three-field plot. There were 73 keywords that were identified and organized into six clusters, such as the effect of COVID-19 risks on human

health, supply chain in construction projects and industry, disaster risk management in a changing climate, sustainable supply chain benchmarking, facility management and quality control, and finally, sensitivity analysis and decision-making. The results show that authors from 51 different countries contributed to the collection of information.

A study by (Kasana , 2023) entitled” Successful change management strategies for unforeseen events: Impact of COVID-19 on facility management “Within the scope of this study, the successful change methods that were implemented in response to unforeseen circumstances or events are identified. As a result of the practically universal impact that COVID-19 has on the field of facility management, the researchers analyzed these unanticipated modifications via the lens of COVID-19. In addition to conducting in-depth follow-up interviews with 28 organizations, the study team gathered survey data from approximately 900 organizations located in more than 60 nations. A total of twenty-two criteria were categorized into three distinct groups: organizational characteristics, organizational change management practices, and adoption measures. To conduct a more in-depth investigation into the connection between the data and the change adoption measures, the research team utilized three random forest models and three logistic regression models. The findings suggest that the appointment of a change agent, the backing of leaders, and the timeline for executing the change were three organizational change practices that were highly significant to the overall success and achievement of the adoption process. According to the findings of the investigation, the sort of unplanned change effort in question influences the degree to which it is adopted over the long term throughout the business. To ensure the successful implementation of unplanned change initiatives, organizations ought to give serious consideration to the utilization of a formal change management methodology. Even though the change may not have been anticipated, this paper emphasizes the significance of an effective transition, the active participation and support of top leaders, and the schedule for implementing the change.

A study by (Ling,Tam,2022) entitled “ Agility of facilities management organizations during the COVID-19 pandemic “The purpose of this study is to analyze the degree to which facilities management (FM) organizations in Singapore were agile within the context of the COVID-19 pandemic, to investigate the agile techniques that were implemented, and to extract lessons learned for managing facilities during future pandemics. Arrangement, methodology, and strategy Additionally, in-depth interviews with FM specialists were conducted in conjunction with

the use of a questionnaire to collect data. The results Significant hurdles were faced by the FM industry, including an increase in operating costs and a shortage of FM staff. It was determined that FM businesses were agile because they were able to overcome obstacles in a short amount of time, made rapid changes to their service offerings as the situation changed, actively engaged facility owners, and adopted tactics that were flexible and responsive. In addition to it, they implemented health-focused employee care. Restrictions and consequences of the research During the course of the pandemic, the research was carried out. When the COVID-19 epidemic is over, it is possible that the ultimate decision about the agility of FM organizations and the strategies that are the most effective will be revealed. Aspects that are applicable in A crystallization of the lessons learned by FM in order to manage future pandemics were reached. Among these are the reduction of reliance on human labor, the acceleration of technological adoption, and the enhancement of individualized employee involvement. The value of originality by testing and validating the agility theory and its six metrics of agility, which include flexibility, velocity, responsiveness, collaboration, visibility, and competence, can be utilized by FM businesses to be agile in the face of a crisis or disruption. This study contributed to the body of knowledge by testing and acknowledging the possibility. A new construction, health-centric employee care, has been discovered, which is the source of its originality. This new building is required to further enhance the performance of FM firms in the event of a pandemic. To foster resiliency among employees, health-centric employee care includes policies that aim to minimize the spread of the virus within the workforce as well as tailored employee support.

A study by (Sarvari, 2022) entitled “A global survey of infection control and mitigation measures for combating the transmission of COVID-19 pandemic in buildings under facilities management services “The purpose of the research that is being detailed in this article is to create efficient infection control and mitigation strategies to stop the spread of the COVID-19 pandemic in the built environment. To provide a response to the topic of how the facilities management business might contribute to the reduction of the transmission of coronavirus, this study will be conducted. For the objective of gathering information from a wide range of important stakeholders, an online survey questionnaire was made available to people all over the world from the 8th of April to the 25th of July 2020. SPSS was used to perform an analysis on the data that was collected. Using a questionnaire-based survey, several different approaches to the prevention and control of infectious disease transmission are evaluated about the effectiveness of these approaches for

maintaining a healthy and safe built environment. The training procedures, the operation and maintenance, and the design and construction were the three categories that were used to classify these approaches. All the offered approaches have a favorable impact on all different kinds of structures, as demonstrated by the findings. For low-risk buildings, these strategies have an equivalent influence; however, for high-risk and extremely high-risk structures, the most significant impact is exerted by training regimens, as well as design and construction measures. Furthermore, the training protocols and the steps that are implemented during operation and maintenance will have the greatest impact on buildings that are at medium risk. The findings have the potential to facilitate the formulation of decisions that are more reasonable in respect to the control of the COVID-19 pandemic outbreak in all shapes and sizes of buildings.

A study by (Hohenstein , 2022) entitled “Supply chain risk management in the COVID-19 pandemic: strategies and empirical lessons for improving global logistics service providers’ performance “Under the circumstances of the COVID19 pandemic, the construction industry is required to take a strong response. As more and more people become aware of the virus's ability to spread, there has been a growing demand for quality improvement across a variety of industries. Facilities Management (FM) is tasked with the primary responsibility of ensuring that the constructed surroundings are productive, comfortable, secure, and environmentally friendly. Additionally, FM is responsible for ensuring that the environment is protected. Within the scope of this study, we intend to investigate the lessons that were learned from the measures that FM organizations put into place during the COVID19 epidemic. Specifically, a quantitative technique approach is utilized in this research. A total of 317 FM companies in Selangor were given questionnaires, and 36% of them responded to provide their information. For the duration of the pandemic, most facilities managers were found to have a comprehensive understanding of FM organization management, according to the findings. To handle future pandemics and disruptions, it is of the utmost necessity to thoroughly determine the lessons acquired in FM during the COVID19 pandemic and to proactively equip and strategize themselves to deal with them. This may be accomplished by fostering the capacity and resilience to adapt to environmental shocks. It is of the utmost importance to put the plan into action since it will serve as a guiding principle for actions that will be taken in the future. An industry proposition for a fair and impartial method to managing future pandemics in Malaysia has been shaped as a result of the effort and the information learned from previous pandemics.

A study by (Amos, 2021) entitled “Enhancing the role of facilities management in the fight against the COVID-19 (SARS-CoV-2) pandemic in developing countries’ public hospitals” The objective of this paper is to provide a review of the ongoing COVID-19 epidemic, with a specific focus on underdeveloped countries in Africa. The objective of this study is to provide evidence that demonstrates how the provision of facilities management (FM) services in public hospitals can be enhanced to combat the COVID-19 epidemic. This study includes a review of the most recent material on COVID-19 and FM, as well as updates from trustworthy media sources. The purpose of this study is to provide a technical perspective on how FM might be enhanced in the fight against the COVID-19 pandemic by critically synthesizing the knowledge that is currently available on the pandemic, the epidemic caused by COVID-19 presents the health care systems of most African countries with problems and realities that have never been seen before. There is a lack of a coherent and comprehensive FM plan to combat the pandemic, despite the substantial efforts that are being made by several different international countries. There is a requirement for FM interventions that are both timely and actionable to establish the necessary antiviral-built environment, the material contained in this report is case-specific and is based on the data and information that was available at the time that the article was being written. The recommendations that were made in the report are helpful for a worse future trajectory of the pandemic, despite the fact that they were made, it is important for administrators of health care facilities to have knowledge of the proposed measures so that they can be informed and assisted in their battle against the COVID-19 pandemic, the purpose of this paper is to give the initial step towards obtaining a comprehensive understanding of FM and the COVID-19 pandemic. In the fight against this worldwide epidemic, it provides advice that can be helpful for the FM practices of public hospitals in most underdeveloped nations. It is the intention of the authors to conduct additional empirical research in the future to conduct more objective evaluations of FM and the COVID-19 pandemic.

## **Chapter 3: Research Methodology and Methods**

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### **1. Research Method**

This study adopts the descriptive analytical method, which is considered one of the most appropriate approaches for studying administrative and organizational phenomena. It enables the researcher to describe the phenomenon as it exists, analyze its various dimensions, and identify the relationships between its variables. This method was selected to suit the nature of the study, which aims to examine the role of facilities management in enhancing risk management within industrial organizations during health crises, with a specific focus on the experience of SABIC during the COVID-19 pandemic.

### **2. Study Population and Sample**

The study population consists of all employees working in SABIC's facilities management, risk management, and operational departments involved in emergency plans and business continuity management. A purposive sampling technique was used to select participants, as these individuals are directly involved in the study's subject and are most capable of providing accurate and reliable information reflecting the organization's experience during the pandemic.

### **3. Data Collection Tool**

The study relies on a questionnaire as the primary tool for data collection from the study sample. The questionnaire was developed in accordance with scientific research standards used in descriptive analytical studies and included a set of closed-ended items designed to measure participants' views and attitudes related to the study topic. The questionnaire was reviewed and validated by a panel of academic and professional experts in the fields of business management and risk management to ensure its linguistic clarity, methodological soundness, and suitability for the study objectives.

### **4. Statistical Analysis Methods**

After collecting the data, it will be processed and analyzed using the Statistical Package for the Social Sciences (SPSS). The study will employ a range of appropriate statistical techniques based on the nature of the data and study objectives, including:

- Frequencies and percentages to describe the demographic characteristics of the sample.

- Means and standard deviations to assess participants' responses.
- Independent sample T-tests and one-way ANOVA to examine differences between group means.
- Pearson correlation coefficient to measure the strength of relationships between variables.
- Regression analysis to determine the impact of independent variables on dependent variables.

## **5. Study Boundaries**

- Topical Boundaries: The study is limited to examining the relationship between facilities management and risk management during health crises, with a particular application to the COVID-19 pandemic.
- Spatial Boundaries: The study will be conducted within SABIC industrial organization in the Kingdom of Saudi Arabia.
- Temporal Boundaries: The study will be implemented during the year 2025.

## **Chapter 4: Results and Recommendations**

## Chapter 4: Results and Recommendations

### Demographic Data

*Table 1 Gender Distribution*

| Gender       | Frequency (N) | Percentage (%) |
|--------------|---------------|----------------|
| Male         | 132           | 89.2%          |
| Female       | 16            | 10.8%          |
| <b>Total</b> | <b>148</b>    | <b>100%</b>    |

The table that displays the gender distribution demonstrates that there is a discernible preponderance of male employees within the sample that was surveyed. There were 132 males who accounted for 89.2% of the total participants, while there were only 16 females who represented 10.8% of the total participants. This demographic mix is reflective of the overall workforce structure that is frequently observed in industrial organizations such as SABIC. In these organizations, operational and site-based jobs have a tendency to be dominated by men due to the nature of the work environment and cultural labor patterns in industrial sectors within the region.

It is essential to take into account this significant gender disparity when interpreting the results of this study. This is because male and female employees may have different perceptions and experiences in relation to risk management strategies and facilities management, particularly during the COVID-19 pandemic. This is because male and female employees have different roles, responsibilities, and exposure levels. Therefore, despite the fact that the findings of this study primarily represent the opinions of male workers, it is still essential to acknowledge and address the perspectives of the female workforce, even though the number of female workers is relatively small, as part of an all-encompassing framework for the management of organizational risk.

*Table 2 Age Group Distribution*

| Age Group          | Frequency (N) | Percentage (%) |
|--------------------|---------------|----------------|
| Less than 30 years | 38            | 25.7%          |
| 30 – 39 years      | 56            | 37.8%          |
| 40 – 49 years      | 39            | 26.4%          |
| 50 years and above | 15            | 10.1%          |
| <b>Total</b>       | <b>148</b>    | <b>100%</b>    |

Regarding the age group distribution, there is a rather even distribution across the various categories, with a little emphasis in the middle age ranges. 37.8% of respondents are employees aged 30–39 years old, followed by those aged 40–49 years old at 26.4%, and then those under 30 years old at 25.7%. The biggest proportion of respondents is comprised of employees aged 30–39 years old. With a percentage of 10.1%, the employees who are 50 years old or older make up the smallest group.

between SABIC's industrial operations, this distribution reflects a workforce that is relatively youthful to middle-aged, with the majority of employees falling between the age groups that are considered to be productive and professionally mature. The fact that the majority of workers are in their 30s and 40s is indicative of a workforce that possesses a significant amount of industrial experience and adaptability, both of which most certainly contributed to the successful functioning of the business throughout the COVID-19 crisis. It is possible that the lower percentage of workers over the age of 50 could be an indication of either earlier retirement trends or the physically demanding nature of industrial employment, which limits long-term retention. Due to the fact that risk awareness, health concerns, and job adaptability can vary greatly across generational lines, it is essential to have an understanding of how these various age groups perceive the role that facilities management plays in mitigating pandemic-related hazards.

***Table 3 Educational Qualification Distribution***

| <b>Educational Qualification</b> | <b>Frequency (N)</b> | <b>Percentage (%)</b> |
|----------------------------------|----------------------|-----------------------|
| High School or Below             | 12                   | 8.1%                  |
| Diploma                          | 45                   | 30.4%                 |
| Bachelor's Degree                | 67                   | 45.3%                 |
| Postgraduate                     | 24                   | 16.2%                 |
| <b>Total</b>                     | <b>148</b>           | <b>100%</b>           |

As can be seen in the table that provides information regarding educational credentials, the majority of respondents have a bachelor's degree, which accounts for 45.3% of the sample. Diploma holders come in second, accounting for 30.4% of the sample. Students with a high school diploma or less make up only 8.1% of participants, while those with a postgraduate degree account for 16.2% of the total.

This educational profile indicates that the workforce within SABIC's industrial divisions is highly educated. This is a reflection of the organization's concentration on recruiting professional and qualified personnel who are capable of managing risk management activities and complicated industrial operations. Due to the fact that individuals who hold bachelor's degrees and postgraduate degrees are more likely to be involved in decision-making, policy formulation, and the implementation of sophisticated risk management and facilities management systems, the significant proportion of individuals who hold these degrees is particularly relevant in the context of this study. In addition, their educational experience provides them with the ability to think critically and a heightened understanding of health and safety regulations, both of which would have been extremely helpful in navigating the operational issues that were brought about by the pandemic.

***Table 4 Work Experience Distribution***

| <b>Work Experience</b> | <b>Frequency (N)</b> | <b>Percentage (%)</b> |
|------------------------|----------------------|-----------------------|
| Less than 5 years      | 35                   | 23.6%                 |
| 5 – 10 years           | 47                   | 31.8%                 |
| More than 10 years     | 66                   | 44.6%                 |
| <b>Total</b>           | <b>148</b>           | <b>100%</b>           |

When looking at the distribution of work experience, it is clear that a sizeable section of the workforce, specifically 44.6%, has more than ten years of experience working for the firm. Those employees who have less than five years of experience make up 23.6% of the respondents, while those who have between five and ten years of experience come in second at 31.8%.

During times of crisis, such as COVID-19, having a staff that is mature and experienced is very important for maintaining operational continuity and adopting risk mitigation methods. This experience profile suggests that the workforce is mature and experienced. The existence of a significant number of personnel with a great deal of experience is indicative of the fact that the business reaps the benefits of institutional knowledge and operational familiarity, both of which are essential assets for fast reacting to unanticipated health hazards. In addition, the combination of individuals with moderate experience and those with less experience creates a balance between seasoned expertise and fresh insights, which can boost resilience and adaptability in the face of pandemics and other operational disturbances.

***Table 5 Work Location Type Distribution***

| <b>Work Location Type</b> | <b>Frequency (N)</b> | <b>Percentage (%)</b> |
|---------------------------|----------------------|-----------------------|
| Office-based              | 52                   | 35.1%                 |
| Site-based                | 74                   | 50.0%                 |
| Remote                    | 18                   | 12.2%                 |
| Other                     | 4                    | 2.7%                  |
| <b>Total</b>              | <b>148</b>           | <b>100%</b>           |

The distribution of work location types reveals that fifty percent of the employees are site-based, while thirty-five point one percent are office-based, twelve point two percent work remotely, and two point seven percent fall into other groups. The fact that a sizeable fraction of SABIC's staff is required to be physically present on production or project sites is reflected in this distribution, which is a reflection of the industrial nature of the company's operations.

In the perspective of risk management during the COVID-19 pandemic, this breakdown is especially noteworthy because of one particular aspect. Site-based employees were more likely to be exposed to health and operational risks as a result of the necessity of maintaining on-site

activities. Office-based staff, on the other hand, experienced moderate exposure, and remote employees encountered minimal physical risk but faced challenges related to communication and workflow continuity. This is a reflection of the operational limits that exist within the industrial sector, where not all functions are able to migrate to virtual work environments. The tiny percentage of employees that work remotely is a reflection of these limitations. There are obvious ramifications for the employees' opinions of the success of facilities management in protecting their health, preserving operational safety, and guaranteeing company continuity throughout the pandemic. These variances in work location have direct effects.

## Survey Sections

*Table 6 Operational Adaptability of Facilities Management*

| No.          | Operational Adaptability of Facilities Management                                                   | Mean   | Standard Deviation | Trend          | Rank |
|--------------|-----------------------------------------------------------------------------------------------------|--------|--------------------|----------------|------|
| 1            | Facilities management adapted swiftly to operational changes during COVID-19.                       | 1.52   | .668               | Strongly Agree | 5    |
| 2            | There were clear procedures to modify facility operations in emergencies.                           | 1.62   | .747               | Strongly Agree | 4    |
| 3            | The organization's facilities management showed flexibility in resource allocation during crises.   | 1.73   | .834               | Strongly Agree | 2    |
| 4            | Facilities management adjusted work schedules and spaces effectively to meet health protocols.      | 2.03   | 1.125              | Strongly Agree | 1    |
| 5            | Operational plans of facilities management were reviewed and updated regularly during the pandemic. | 1.68   | .788               | Strongly Agree | 3    |
| <b>Total</b> |                                                                                                     | 1.7135 | .63285             | Strongly Agree |      |

In the course of the COVID-19 epidemic, the results that are reported in Table provide useful insights into the perceptions of employees on the operational adaptability of facilities management inside SABIC. In this particular dimension, the total mean score is 1.7135, and the standard deviation is 0.63285. This indicates that there is a great overall agreement among respondents regarding the high level of adaptability that was displayed by facilities management during the crisis.

The item "Facilities management adapted swiftly to operational changes during COVID-19" obtained a mean score of 1.52, placing it at the fifth rank, despite the fact that it was still classified as belonging to the "Strongly Agree" trend. This was determined by examining the individual assertions in further depth. Because of this result, it is clear that the vast majority of workers have expressed their satisfaction with the promptness with which facilities management responded to the unexpected demands placed on operations as a result of the epidemic. Because of this rapid adaptability, it is quite likely that immediate alterations were made to the arrangements of the workspace, adjustments were made to the protocols for building access, and health and safety measures were implemented as quickly as possible.

"There were clear procedures to modify facility operations in emergencies" was the second item, and it had a mean score of 1.62, which placed it in the fourth position. The fact that this result occurred indicates that employees had the impression that the organization had established and communicated well-defined and organized rules for dealing with operational alterations in the event of an emergency. Clear standards assist maintain consistency in response, decrease operational confusion, and promote employee confidence in the safety of their working environment. The importance of such protocols cannot be emphasized, especially during a health crisis, because they help ensure that there is no confusion in the operational process.

An average score of 1.73 was obtained for the third statement, which said, "The organization's facilities management demonstrated flexibility in resource allocation during crises." This statement came in second place. The fact that the respondents agreed that facilities management effectively managed and redistributed resources, whether they were human, material, or spatial, in order to support important operating areas and health safety needs is reflected in this score. During the COVID-19 outbreak, this would have entailed redistributing cleaning people to

high-risk locations, acquiring more personal protective equipment (PPE), and redesigning some facility spaces in order to segregate individuals who were experiencing symptoms or to accommodate necessary services while maintaining a physical distance between them.

It is interesting to note that the item that received the highest ranking in this area was "Facilities management adjusted work schedules and spaces effectively to meet health protocols," which received a mean score of 2.03. In spite of the fact that this number is marginally higher than the others (which indicates a little lower level of agreement), it continues to fall within the "Strongly Agree" trend. It is possible that the relatively higher mean indicates that although employees appreciated the efforts that were made to adapt work schedules and space configurations, some of them may have encountered operational limitations or challenges due to the industrial nature of SABIC's work environment. This is because certain roles may not have been able to accommodate full remote work or drastic scheduling changes. In spite of this, the widespread consensus strongly suggests that the modifications that were implemented were, for the most part, successful in mitigating health-related operational hazards.

Last but not least, the statement that "Operational plans of facilities management were reviewed and updated regularly during the pandemic" received a mean score of 1.68, which placed it in third place. The fact that this result occurred indicates that employees are aware of the need for continual monitoring and the improvement of operational processes in order to respond to the ever-changing nature of the pandemic. Regular plan changes would have been necessary in order to include newly enacted legislative requirements, emerging best practices, and feedback from personnel working on the ground. This would have ensured that the facilities management strategy remained proactive rather than reactive.

A highly positive appraisal of the operational adaptability of SABIC's facilities management amid an exceptional crisis is conveyed by these outcomes collectively, which express a highly good review. The fact that the "Strongly Agree" trend is consistent across all items, in addition to the relatively low standard deviations, suggests that employees have a common sense of operating methods that are robust, well-managed, and flexible.

Based on the findings shown in this table, it appears that the facilities management of SABIC not only acknowledged the significance of quick operational flexibility during the COVID-19 pandemic, but also successfully adopted measures that were apparent to employees and appreciated by them. This resilience in operations was accomplished by making prompt improvements to procedures, managing resources in a flexible manner, conducting regular operational assessments, and employing scheduling tactics that were mindful of health concerns. The high degree of agreement among respondents highlights the vital role that well-structured facilities management plays in protecting both the continuation of business operations and the well-being of employees during times of emergency.

These realizations have direct repercussions for the techniques that will be used in the future to manage crises. The development of dynamic facilities management frameworks that are capable of providing rapid responses to health and operational crises should be a priority for organizations, particularly those that are in the industrial sector. Furthermore, the continuous participation of workers in feedback loops has the potential to further improve adaptability. This helps to guarantee that operational plans continue to be applicable, efficient, and in line with the realities that are present at the location.

***Table 7 Management of Health, Safety, and Security within Facilities Management***

| No. | Management of Health, Safety, and Security within Facilities Management                 | Mean | Standard Deviation | Trend          | Rank |
|-----|-----------------------------------------------------------------------------------------|------|--------------------|----------------|------|
| 1   | Facilities management implemented effective health and safety measures during COVID-19. | 1.54 | .750               | Strongly Agree | 5    |
| 2   | Regular sanitization and disinfection procedures were applied across all facilities.    | 2.13 | 1.225              | Strongly Agree | 1    |
| 3   | Safety guidelines and awareness materials were clearly communicated to employees.       | 1.69 | .700               | Agree          | 4    |
| 4   | The company provided designated areas for COVID-19                                      | 1.70 | .901               | Strongly Agree | 3    |

|              |                                                                                                                                           |        |          |                |   |
|--------------|-------------------------------------------------------------------------------------------------------------------------------------------|--------|----------|----------------|---|
|              | suspected case testing and isolation.                                                                                                     |        |          |                |   |
| 5            | The company supported employees in receiving the COVID-19 vaccine by providing designated areas or collaborating with health authorities. | 2.00   | 1.084    | Strongly Agree | 2 |
| <b>Total</b> |                                                                                                                                           | 1.8129 | 0.730376 | Strongly Agree |   |

The results that are reported in Table shed insight on the perceptions that employees had regarding the efficiency of health, safety, and security management measures that were implemented within the scope of SABIC's facilities management during the COVID-19 pandemic. There is a high degree of overall agreement and satisfaction with the health and safety measures that were implemented by the organization in response to the crisis, as indicated by the fact that the overall mean score for this dimension is 1.8129, and the standard deviation is 0.730376.

When we look at each of the individual components, we see that the statement "Facilities management implemented effective health and safety measures during COVID-19" received a mean score of 1.54 and was rated sixth. In spite of the fact that it was ranked the lowest in this category, it is still within the range of "Strongly Agree," which indicates that a significant number of workers acknowledge the important actions that are carried out by facilities management. The enforcement of entry screening standards, the installation of sanitization stations, the management of occupancy restrictions, the guarantee of the availability of personal protective equipment (PPE), and the close monitoring of employee well-being were probably among the activities that were taken.

While the second item, which stated that "Regular sanitization and disinfection procedures were applied across all facilities," obtained a slightly higher mean score of 2.13, it was noteworthy because it held the #1 place in this particular dimension. Sanitization and disinfection efforts were the most obvious and appreciated component of the organization's health and safety management throughout the pandemic, as demonstrated by this outcome, which underscores the fact that these activities were utilized. The somewhat higher mean in comparison to other items may reflect that although employees generally agreed with the presence of these procedures, there may have been

variances in consistency or execution across different sites and departments, which may have influenced opinions. Maintaining uniform sanitation schedules throughout both administrative offices and operating sites would have presented logistical issues due to the industrial nature of SABIC's operations; yet, the reaction was regarded positively with regard to the overall situation.

It was the third statement that had a mean score of 1.69, which placed it in fourth place. The statement stated that "Safety guidelines and awareness materials were clearly communicated to employees." A strong perception of communication techniques connected to health and safety rules is indicated by this result, which alludes to a broadly positive perception. Some employees may have desired more frequent updates, clearer instructions that were tailored to specific operational environments, or broader accessibility, particularly for site-based and shift-working personnel. This could be inferred from the slight decline in ranking in comparison to other items, which could imply that safety materials were available and disseminated.

When compared to this, the statement that "The company provided designated areas for COVID-19 suspected case testing and isolation" had a score of 1.70 and was ranked third respectively. This suggests that employees strongly agreed with the proactive actions taken by the corporation in constructing isolation and testing zones within its facilities. Both of these locations were established. When it comes to crisis health management, one of the greatest practices is the provision of separate places for suspected cases. This practice helps to reduce the risk of infection spreading within the workforce and boosts employee confidence in the safety of their working environment. The favorable perception of this solution exemplifies SABIC's dedication to minimizing the hazards to health while also preserving the continuity of operations.

A mean score of 2.00 was reported for the fifth statement, which "The company supported employees in receiving the COVID-19 vaccine by providing designated areas or collaborating with health authorities." This statement was ranked second in terms of its overall score. The organization's proactive participation in promoting staff vaccination, which is an essential component of long-term health risk management, is reflected in this robust agreement. One of the most important preventative strategies against COVID-19 was properly addressed by SABIC. This was accomplished by either organizing vaccination programs on-site or cooperating with local health authorities. The significantly higher mean in comparison to other items may show that

although employees acknowledged this assistance, the availability, timing, or accessibility of immunization services may have differed between operational sites and staff groups. This is because the mean was relatively higher than everything else.

A clear and persistent trend of strong agreement among employees regarding the management of health, safety, and security within SABIC's facilities during the COVID-19 pandemic is revealed by the results of this table, which disclose the results collectively. The overall low standard deviations across the majority of the questions suggest a high degree of unanimity among the respondents, which indicates that health and safety standards were implemented uniformly across a variety of work locations.

According to these findings, the facilities management at SABIC displayed remarkable leadership in the area of health risk mitigation. They did this by rapidly executing sanitization protocols, providing health screening and isolation services, communicating health recommendations, and supporting immunization initiatives. Even relatively slight differences in item ranks and mean scores might provide useful insights that can be used for ongoing improvement. For instance, further improvements in the clarity, frequency, and customization of safety information, in addition to ensuring that disinfection processes are carried out in a consistent manner, can increase employee satisfaction and organizational resilience in the event of future emergencies.

In addition, the findings highlight the significance of incorporating comprehensive health and safety standards into facilities management plans, particularly in industrial firms where actual physical presence on the premises is vital. In the event that other industrial organizations are looking to increase their operational health and safety resilience against future pandemics or public health emergencies, the lessons that SABIC learned during COVID-19 can serve as a model for them to follow.

**Table 8 The Continuity of Services Rendered by Facilities Management**

| No.          | The Continuity of Services Rendered by Facilities Management                            | Mean   | Standard Deviation | Trend          | Rank |
|--------------|-----------------------------------------------------------------------------------------|--------|--------------------|----------------|------|
| 1            | Essential services by facilities management remained uninterrupted during COVID-19.     | 1.69   | .810               | Strongly Agree | 5    |
| 2            | Alternative service delivery methods were introduced when direct access was restricted. | 2.58   | 1.320              | Strongly Agree | 1    |
| 3            | Communication with service users was effectively maintained during the crisis.          | 1.91   | 1.107              | Agree          | 4    |
| 4            | Facilities management effectively managed supply chains for critical materials.         | 1.96   | 1.121              | Strongly Agree | 3    |
| 5            | Preventive maintenance services were sustained without major disruption.                | 2.11   | 1.097              | Strongly Agree | 2    |
| <b>Total</b> |                                                                                         | 2.0458 | 0.733033           | Strongly Agree |      |

The results that are reported in Table provide important insights into the perceptions that SABIC employees have regarding the capacity of facilities management to keep services running without interruption during the COVID-19 pandemic. There are enormous logistical and strategic problems that must be overcome in order to maintain operational continuity in a major industrial organization while the organization is under the stress of a global health crisis. The overall mean score for this dimension is 2.0458, and the standard deviation is 0.733033. This indicates that there is a high level of agreement among respondents on the fact that basic services were maintained for the most part throughout the crisis.

The first item, which was "Essential services by facilities management remained uninterrupted during COVID-19," had a mean score of 1.69, which placed it sixth in rank. Despite this, it was still inside the "Strongly Agree" category. This was determined by examining the individual assertions in greater depth. This result is a reflection of the employees' recognition of the organization's commitment to ensuring that critical operational services, such as the

management of utilities, security, and cleaning services, continued without encountering significant disruptions despite the widespread operational constraints imposed by the pandemic. This outcome demonstrates the efficacy of proactive planning and crisis management frameworks in an industrial setting such as that of SABIC, where uninterrupted facility services are essential for ensuring the safety of employees as well as the continuity of production.

The second item, which said that "alternative service delivery methods were introduced when direct access was restricted," had a mean score of 2.58, which placed it at the top of the list in this particular dimension. Despite the fact that the mean score is significantly higher than the scores for other items, it is still classified as "Strongly Agree," which indicates that employees have a generally positive impression of the company. The organization's agility in rethinking service delivery modalities under circumstances when physical access was restricted as a result of lockdowns, curfews, or quarantine regulations is highlighted by this score. The introduction of remote monitoring systems, digital reporting platforms, staggered operational shifts, and contactless maintenance methods are some examples of the kinds of improvements that could be made. It is possible that the comparatively higher mean in this case indicates that although these measurements were acknowledged, their application may have differed in terms of consistency or efficacy across different sites or departments. This is a reflection of the inherent complexity that are associated with fast shifting operational models for industrial service delivery.

The third statement, which said that "Communication with service users was effectively maintained during the crisis," received a mean score of 1.91, which placed it in the fourth position. This result indicates that there is a unanimous consensus among workers that communication channels have remained active and efficient, which has made it easier to disseminate information on updates, adjustments to operating procedures, and health guidelines in a timely manner. This score suggests that SABIC's facilities management teams were successful in keeping service users informed and involved. Effective communication is a cornerstone of crisis management, and this score indicates that they were successful in doing so. However, when compared to other items in this dimension, the slightly higher mean and lower rank indicate that there may have been occasional gaps in communication frequency, clarity, or accessibility. This is especially true for individuals who are located in remote or site-based locations at times of peak crisis.

The fourth question, which was titled "Facilities management effectively managed supply chains for critical materials," received a mean score of 1.96, which placed it in third place. During a period in which global logistics networks were confronted with extraordinary interruptions, this robust agreement provides a positive reflection on the organization's supply chain resilience. To ensure the continuity and safety of operations, it was necessary to ensure that a steady supply of key materials, including cleaning chemicals, protective equipment, maintenance tools, and spare parts, was available at all times. The low mean score, in conjunction with the moderate standard deviation, indicates that employees in a variety of jobs and locations had a constant degree of material availability. This is a testament to the robustness of SABIC's supply chain management tactics when they are put under duress.

Last but not least, the assertion that "Preventive maintenance services were sustained without major disruption" had a mean score of 2.11, placing it in second place. The fact that this agreement is so solid suggests that the organization prioritized continuous maintenance work notwithstanding the limits that were imposed due to the outbreak. The importance of preventive maintenance cannot be overstated in industrial settings, where the breakdown of equipment or problems with infrastructure can result in both safety risks and delays in operations. Through the maintenance of these services, SABIC was able to not only protect the physical integrity of its facilities but also maintain the operational reliability of its operations and the faith of its employees in the safety of their workplace.

The facts shown in this table, taken as a whole, provide a consistent and positive appraisal of the effectiveness of SABIC's facilities management in terms of sustaining service continuity throughout the COVID-19 pandemic. The tendency of "Strongly Agree" across the majority of items, in conjunction with relatively low standard deviations, implies that there is a widespread agreement among employees regarding the efficiency of these metrics.

Based on the findings, it appears that the facilities management teams at SABIC have demonstrated operational resilience by ensuring that essential services are not interrupted, implementing alternative service delivery methods when they are required, maintaining proactive communication with service users, effectively managing supply chains, and maintaining preventive maintenance operations. During one of the most difficult times in the history of modern

organizations, these activities collectively contributed to minimize disruptions to operations, ensuring employee safety, and maintaining morale among workers.

A good opportunity for future enhancement is presented by the considerably higher mean for the statement concerning alternate methods of service delivery. Despite the fact that excellent efforts were made, it is possible that the overall operational resilience of the organization might be improved through greater refining and standardization of alternative service techniques in relation to future crises. Furthermore, in order to cultivate confidence and collaboration between service users and facilities management teams, it will be necessary to keep and even enhance communication channels that are both clear and responsive.

The importance of facilities management is further highlighted by these findings, which highlight its position not only as a function that provides operational assistance but also as a strategic partner in the management of organizational risks and crisis response. For other industrial companies that are looking to improve their operational continuity frameworks and facilities management capacities in preparation for future public health emergencies, the experience that SABIC had during COVID-19 can serve as an instructive model.

***Table 9 Enhancement of Risk Management***

| No. | Enhancement of Risk Management                                                                  | Mean | Standard Deviation | Trend          | Rank |
|-----|-------------------------------------------------------------------------------------------------|------|--------------------|----------------|------|
| 1   | Facilities management contributed to identifying and assessing new risks during the pandemic.   | 1.88 | 1.012              | Strongly Agree | 1    |
| 2   | A clear risk management plan was integrated within facilities management procedures.            | 1.84 | .856               | Agree          | 2    |
| 3   | Facilities management teams were actively involved in decision-making regarding risk responses. | 1.56 | .736               | Strongly Agree | 5    |

|              |                                                                                           |          |          |                |   |
|--------------|-------------------------------------------------------------------------------------------|----------|----------|----------------|---|
| 4            | Lessons learned from COVID-19 were documented to improve future risk management.          | 1.67     | .813     | Strongly Agree | 4 |
| 5            | Facilities management enhanced its crisis preparedness following the pandemic experience. | 1.77     | .879     | Strongly Agree | 3 |
| <b>Total</b> |                                                                                           | 1.744222 | 0.655548 | Strongly Agree |   |

During the COVID-19 pandemic, the results that are reported in Table provide a complete picture on how personnel working for SABIC perceived the role that facilities management played in increasing organizational risk management. The overall mean score for this dimension is 1.7442, and the standard deviation is reasonably low at 0.6555. This indicates that there is a high level of agreement among the participants, and it also indicates that there is consistency in the way that respondents experienced risk management initiatives within the context of facilities management.

When the individual statements are broken down, the first item, which is titled "Facilities management contributed to identifying and assessing new risks during the pandemic," received a mean score of 1.88, which earned it the highest position in this category. The importance of facilities management in identifying and assessing new operational, health, and logistical risks posed by the pandemic is reflected in this robust agreement, which demonstrates the crucial role playing by facilities management. Infection control, supply chain vulnerabilities, workplace redesign, and emergency resource management were some of the areas that were included in these hazards, which went beyond the typical safety concerns that were previously mentioned. Employees were able to understand how facilities management successfully integrated into the larger organizational risk landscape, actively participating in the identification of vulnerabilities that could affect both human and operational safety. This is indicated by the high degree of agreement that was reached.

A mean score of 1.84 was assigned to the second statement, which said that "A clear risk management plan was integrated within facilities management procedures." This statement was ranked second and fell inside the "Agree" trend; it obtained this score. The slightly higher score in

comparison to other items suggests that although the majority of employees acknowledged the existence of a formalized risk management framework, there may have been occasional gaps in its clarity, scope, or practical application across a variety of operational sites. This is despite the fact that the score is still extremely positive. By refining risk management protocols to be more explicit, comprehensive, and flexible for a variety of facility types and operational settings, this conclusion shows a critical opportunity for further refinement that can be taken advantage of.

The third item, which states that "Facilities management teams were actively involved in decision-making regarding risk responses," received the lowest mean score of 1.56, despite the fact that it is ranked fifth. In spite of its lower rank, it continues to fall within the "Strongly Agree" category, which indicates that facilities management was seen to be an essential component of the organizational decision-making processes during the crisis. Employees have a continuously good opinion of the strategic participation of facilities management, as evidenced by the low mean and narrow standard deviation. The significance of this lies in the fact that, historically speaking, the functions of facilities management are frequently considered to be operational support services rather than strategic partners. According to the findings, SABIC was able to successfully reposition its facilities management teams as active contributors to organizational resilience planning and crisis response strategies during the COVID-19 event.

A mean score of 1.67 was reported for the fourth statement, which said that "Lessons learned from COVID-19 were documented to improve future risk management." This statement comes in at the fourth position. The score indicates that there is a high level of consensus among employees on the fact that the company adopted a reflective and organized approach to documenting the experiences and difficulties that were faced throughout the epidemic. This method is essential for increasing institutional memory, ensuring that future reactions are guided by practical experiences, and establishing a culture of continual improvement in risk management measures. All of these goals can be accomplished through their implementation. As a result of the good response to this item, it appears that SABIC acknowledged the significance of institutional learning and took proactive measures to formalize this knowledge, which is an essential component of the long-term resilience of an organization.

Last but not least, the fifth statement, which reads, "Facilities management enhanced its crisis preparedness following the pandemic experience," was given a mean score of 1.77, placing it in third place. The fact that employees highly agreed with the idea that facilities management techniques were not only reactive during the epidemic but also evolved in the aftermath of the pandemic, leading to enhanced readiness for future crises, is highlighted by this finding. According to the favorable perception, the organization was able to utilize the difficulties brought about by COVID-19 as a catalyst for improving its disaster preparedness frameworks, operational protocols, and resource management capacities.

SABIC's facilities management teams were not passive players but rather crucial strategic partners in the organization's risk management processes throughout the COVID-19 pandemic, as indicated by the outcomes of this table, which collectively send a message that is both clear and consistent. The domination of "Strongly Agree" trends, coupled with low standard deviations, implies a common awareness among employees of the crucial role that facilities management played in identifying risks, contributing to decision-making, and increasing crisis preparedness.

The fact that there was a particularly high level of agreement on the role of facilities management to the identification of new hazards, in addition to the acknowledgment that codified lessons learned were documented, is a noteworthy insight that can be gleaned from the data. This demonstrates a culture inside the firm that is mature and proactive in its approach to risk management, where operational learning and continuous improvement are prioritized. Given that the statement addressing the clarity of integrated risk management strategies had a somewhat higher mean score, it is possible that there is room for improvement in this particular area. Enhancing the clarity, uniformity, and accessibility of procedures across all operational units can further increase organizational preparation. Although it was obvious that processes were in place and generally effective, this does not mean that they were not effective.

A further point to consider is that the widespread consensus on the active participation of facilities management in risk decision-making poses a challenge to the conventional, frequently peripheral role that facilities teams are allocated. It symbolizes a strategic shift in SABIC's operational philosophy, which acknowledges that effective risk management in industrial organizations must be holistic, integrating physical infrastructure management with broader

business continuity planning. This transition is a testament to the fact that SABIC has recognized the importance of this.

The significance of incorporating the lessons learned from COVID-19 into official risk management policies, operational guidelines, and facilities management protocols is highlighted by these findings, which highlight the need of institutionalizing lessons learned from COVID-19. Additionally, the positive employee perceptions evidenced in this table demonstrate that SABIC's approach to integrating facilities management into crisis response planning can serve as a best-practice model for other industrial organizations aiming to enhance their organizational resilience against future health, safety, and operational risks.

## Hypotheses Validation

### A principal hypothesis

- There exists a statistically significant correlation between facility management and enhanced risk management at SABIC during the COVID-19 pandemic.

*Table 10 Validation of the First Hypothesis*

| Model Summary |                   |          |                   |                            |                 |          |      |      |               |
|---------------|-------------------|----------|-------------------|----------------------------|-----------------|----------|------|------|---------------|
| Model         | R                 | R Square | Adjusted R Square | Std. Error of the Estimate | R Square Change | F Change | df 1 | df 2 | Sig. F Change |
| 1             | .727 <sup>a</sup> | .528     | .526              | .50608                     | .528            | 249.420  | 1    | 223  | .000          |

a. Predictors: (Constant), enhanced risk management

| ANOVA <sup>a</sup> |            |                |     |             |         |                   |
|--------------------|------------|----------------|-----|-------------|---------|-------------------|
| Model              |            | Sum of Squares | df  | Mean Square | F       | Sig.              |
| 1                  | Regression | 63.881         | 1   | 63.881      | 249.420 | .000 <sup>b</sup> |
|                    | Residual   | 57.114         | 223 | .256        |         |                   |
|                    | Total      | 120.995        | 224 |             |         |                   |

a. Dependent Variable: facility management

b. Predictors: (Constant), enhanced risk management

|       |                          | Coefficients <sup>a</sup>   |            |                                |        |      |
|-------|--------------------------|-----------------------------|------------|--------------------------------|--------|------|
| Model |                          | Unstandardized Coefficients |            | Standardized Coefficients Beta | t      | Sig. |
|       |                          | B                           | Std. Error |                                |        |      |
| 1     | (Constant)               | .457                        | .097       |                                | 4.682  | .000 |
|       | enhanced risk management | .842                        | .053       | .727                           | 15.793 | .000 |

a. Dependent Variable: facility management

The measurable investigation displayed over gives compelling observational prove supporting the presence of a solid and measurably noteworthy relationship between office administration hones and improved chance administration inside SABIC amid the COVID-19 widespread. The comes about gotten through the relapse demonstrate, ANOVA, and coefficient tables collectively offer a clear picture of how advancements in hazard administration hones, especially those actualized inside the offices administration space, specifically affected the organization's capacity to react to, oversee, and recoup from operational dangers postured by the wellbeing crisis.

The Demonstrate Rundown table uncovers a relationship coefficient (R) esteem of 0.727, showing a solid positive relationship between the two factors. This tall relationship proposes that as the adequacy of upgraded chance administration measures expanded, the execution and commitment of offices administration progressed in parallel.

Moreover, the R Square esteem of 0.528 implies that roughly 52.8% of the change in office administration adequacy can be clarified by the upgrades made in hazard administration amid the widespread. This is an astoundingly significant extent in organizational thinks about, particularly given the complex, multi-dimensional nature of mechanical office operations. It illustrates that chance administration techniques, especially those related to wellbeing, security, emergency readiness, and operational coherence, had a definitive impact on how offices administration adjusted and conveyed its administrations in the midst of an unstable operational environment.

The Balanced R Square esteem of 0.526 advance affirms the model's strength, bookkeeping for the potential effect of test measure and indicator factors on the informative control of the demonstrate. The generally little contrast between R Square and Balanced R Square recommends show solidness and reliability.

The ANOVA table strengthens the factual centrality of the relapse demonstrate. The F-value of 249.420, with a comparing Sig. (p-value) of 0.000, affirms that the show is measurably noteworthy at the 0.05 level, and that the relationship between improved hazard administration and office administration is not due to irregular chance.

The exceedingly critical F-test result outlines that the relapse show definitively progresses the expectation of office administration results based on changes in hazard administration procedures. Given the operational and health-related vulnerabilities amid the COVID-19 widespread, this finding underscores the essential part of coordinates, proactive, and responsive hazard administration systems in supporting viable office operations inside huge mechanical substances like SABIC.

The Coefficients table gives encourage clarity on the nature of this relationship. The unstandardized relapse coefficient (B) for improved hazard administration is 0.842, with a standard mistake of 0.053 and an exceedingly critical t-value of 15.793 ( $p = 0.000$ ). This coefficient shows that for each one-unit increment in the improved hazard administration score, the office administration score increments by 0.842 units, expecting all other components stay constant.

This significant positive coefficient outlines the unmistakable operational benefits of made strides chance administration hones, especially inside offices administration settings. It means that operational alterations such as fast execution of wellbeing and security conventions, asset reallocation, elective benefit conveyance strategies, and emergency readiness plans had a quantifiable and exceedingly positive affect on how office administration capacities performed amid the pandemic.

The Consistent esteem (0.457), in spite of the fact that measurably noteworthy, speaks to the standard level of office administration viability when hazard administration hones are at a least level. Whereas critical, its lower esteem compared to the improved hazard administration

coefficient emphasizes that it was the changes and adjustments in chance administration that overwhelmingly drove the upgrades in office administration outcomes.

In outline, these relapse comes about conclusively affirm that improved hazard administration hones played a basic part in reinforcing offices administration execution at SABIC amid the COVID-19 widespread. The solid positive relationship, tall informative control ( $R^2 = 52.8\%$ ), and noteworthy relapse coefficients reflect the successful integration of chance administration methodologies inside the offices administration framework.

From a vital point of view, these discoveries approve the speculation that hazard administration is not only an assistant or compliance work but a key enabler of operational progression, security, and strength — especially in complex mechanical situations. The comes about moreover highlight the significance of reporting lessons learned from emergency encounters and joining them into organizational systems to progress future availability and operational agility.

For SABIC and comparative organizations, these bits of knowledge fortify the esteem of seeing offices administration as a proactive, vital work that contributes straightforwardly to corporate hazard administration and trade coherence arranging. Moving forward, mechanical organizations can advantage from formalizing this coordinates approach, guaranteeing that offices administration groups are efficiently included in hazard distinguishing proof, appraisal, decision-making, and readiness arranging processes.

The measurable prove displayed in this examination offers a solid underwriting of the positive, critical relationship between office administration execution and improved hazard administration amid wellbeing emergencies such as the COVID-19 widespread. It underscores the basic require for mechanical organizations to fortify their hazard administration systems, especially inside the scope of offices administration, to protect operational coherence and worker well-being in the confront of future emergencies.

## Sub hypotheses

- **H1: There exists a statistically significant correlation between the operational adaptability of facility management and the enhancement of risk management at SABIC during the COVID-19 pandemic.**

**Table 11 Validation of the First Hypothesis**

| Model Summary |                   |          |                   |                            |                 |                               |      |      |               |
|---------------|-------------------|----------|-------------------|----------------------------|-----------------|-------------------------------|------|------|---------------|
| Model         | R                 | R Square | Adjusted R Square | Std. Error of the Estimate | R Square Change | Change Statistics<br>F Change | df 1 | df 2 | Sig. F Change |
| 1             | .773 <sup>a</sup> | .597     | .595              | .46750                     | .597            | 330.602                       | 1    | 223  | .000          |

a. Predictors: (Constant), enhancement of risk management

| ANOVA <sup>a</sup> |            |                |     |             |         |                   |
|--------------------|------------|----------------|-----|-------------|---------|-------------------|
| Model              |            | Sum of Squares | df  | Mean Square | F       | Sig.              |
| 1                  | Regression | 72.256         | 1   | 72.256      | 330.602 | .000 <sup>b</sup> |
|                    | Residual   | 48.739         | 223 | .219        |         |                   |
|                    | Total      | 120.995        | 224 |             |         |                   |

a. Dependent Variable: operational adaptability

b. Predictors: (Constant), enhancement of risk management

| Coefficients <sup>a</sup> |                                |                             |            |                                   |        |      |
|---------------------------|--------------------------------|-----------------------------|------------|-----------------------------------|--------|------|
| Model                     |                                | Unstandardized Coefficients |            | Standardized Coefficients<br>Beta | t      | Sig. |
|                           |                                | B                           | Std. Error |                                   |        |      |
| 1                         | (Constant)                     | .491                        | .084       |                                   | 5.881  | .000 |
|                           | enhancement of risk management | .778                        | .043       | .773                              | 18.182 | .000 |

a. Dependent Variable: operational adaptability

The measurable comes about displayed in this relapse investigation offer compelling experimental prove supporting Speculation H1, which set that there exists a measurably critical relationship between the operational versatility of office administration and the improvement of hazard administration inside SABIC amid the COVID-19 widespread. The discoveries, determined

from the show outline, ANOVA, and coefficients tables, collectively set up a solid and significant relationship between these two basic operational measurements, giving experiences into how enhancements in chance administration hones straightforwardly affected office management's capacity to adjust and keep up commerce progression amid an open wellbeing crisis.

The Demonstrate Outline table uncovers an R-value of 0.773, showing an exceptionally solid positive relationship between the improvement of hazard administration and the operational versatility of office administration. This implies that as chance administration hones were reinforced and more viably coordinates into organizational strategies, the flexibility of office administration capacities expanded in pair. Such a tall relationship coefficient is especially critical inside mechanical situations like SABIC, where operational adaptability and quick reaction are pivotal to keeping up security and efficiency beneath widespread conditions.

The R Square esteem stands at 0.597, meaning that around 59.7% of the change in operational versatility can be clarified by the improvements made in chance administration. This is a strikingly tall illustrative control in organizational considers, highlighting that about two-thirds of the changes in office management's operational flexibility amid the widespread were specifically inferable to the changes and procedures received in chance management.

Moreover, the Balanced R Square esteem of 0.595 closely adjusts with the R Square esteem, demonstrating that the show is vigorous and dependable, with negligible overestimation due to test estimate or indicator factors. This steadiness assist strengthens the validity of the relationship between these two builds inside the SABIC organizational context.

The ANOVA table advance affirms the factual noteworthiness of this relationship. The F-value of 330.602, coupled with a p-value (Sig.) of 0.000, demonstrates that the relapse show is exceedingly factually critical at the 0.05 certainty level. This result gives solid prove that the relapse condition offers an important enhancement in anticipating the operational flexibility of offices administration when joining improvements in chance management.

This result underscores the operational reality that amid the COVID-19 widespread, changes in chance administration — such as proactive risk recognizable proof, clear communication of wellbeing conventions, energetic possibility arranging, and asset reallocation

— were not fringe exercises but fundamental drivers of how rapidly and successfully office administration groups seem adjust to fast-changing operational demands.

The Coefficients table gives nitty gritty experiences into the nature and quality of this relationship. The unstandardized coefficient (B) for improved hazard administration is 0.778, with an exceptionally low standard blunder of 0.043 and a profoundly noteworthy t-value of 18.182 ( $p = 0.000$ ). This implies that for each one-unit increment in the upgrade of chance administration score, the operational flexibility score of office administration increments by 0.778 units, holding all other components constant.

This is a significant impact estimate, outlining that chance administration upgrades had a capable and quantifiable effect on office management's operational adaptability. It proposes that intercessions like upgrading wellbeing and security conventions, making strides chance communication, and conveying crisis asset plans empowered office administration groups to quickly alter operational plans, reconfigure spaces, and adjust administrations without compromising organizational security or continuity.

The steady esteem (0.491), too factually critical, speaks to the pattern level of operational flexibility in the nonattendance of any upgrades in chance administration. In spite of the fact that operational versatility would have existed at a fundamental level without pandemic-specific chance administration enhancements, the show affirms that it was the consider reinforcing of hazard administration systems that altogether boosted office management's operational strength and responsiveness amid the wellbeing crisis.

Taken together, these discoveries unequivocally back Theory H1, illustrating a factually critical and for all intents and purposes important relationship between the operational versatility of office administration and the upgrade of chance administration at SABIC amid the COVID-19 widespread. The solid relationship ( $R = 0.773$ ) and tall informative control ( $R^2 = 59.7\%$ ) emphasize the basic part of coordinates hazard administration systems in empowering office administration capacities to stay adaptable, proactive, and successful beneath phenomenal operational constraints.

From a key and administrative point of view, these comes about approve the need of inserting hazard administration as a center component of offices administration operations, not as it were amid emergency periods but as a changeless highlight of organizational foundation. SABIC's encounter amid COVID-19 highlights that mechanical organizations can essentially upgrade their operational flexibility by guaranteeing that hazard administration conventions are comprehensive, energetic, and completely coordinates into office administration practices.

Moreover, the discoveries serve as a best-practice demonstrate for comparable organizations looking for to move forward their emergency reaction capabilities and operational coherence. Future operational techniques ought to prioritize this arrangement, guaranteeing that office administration and hazard administration are not treated as confined capacities but as forbid frameworks that collectively protect organizational resources, workforce security, and commerce progression in the confront of both anticipated and unexpected risks.

- **H2: There exists a statistically significant correlation between the management of health, safety, and security within facilities management and the enhancement of risk management in SABIC.**

**Table 12 Validation of the second Hypothesis**

| Model Summary |                   |          |                   |                            |                 |                               |      |      |               |
|---------------|-------------------|----------|-------------------|----------------------------|-----------------|-------------------------------|------|------|---------------|
| Model         | R                 | R Square | Adjusted R Square | Std. Error of the Estimate | R Square Change | Change Statistics<br>F Change | df 1 | df 2 | Sig. F Change |
| 1             | .658 <sup>a</sup> | .434     | .431              | .55439                     | .434            | 170.672                       | 1    | 223  | .000          |

a. Predictors: (Constant), enhancement of risk management

| ANOVA <sup>a</sup> |            |                |     |             |         |                   |
|--------------------|------------|----------------|-----|-------------|---------|-------------------|
| Model              |            | Sum of Squares | df  | Mean Square | F       | Sig.              |
| 1                  | Regression | 52.456         | 1   | 52.456      | 170.672 | .000 <sup>b</sup> |
|                    | Residual   | 68.539         | 223 | .307        |         |                   |
|                    | Total      | 120.995        | 224 |             |         |                   |

a. Dependent Variable: management of health, safety

b. Predictors: (Constant), enhancement of risk management

|       |                                | Coefficients <sup>a</sup>   |            |                                |        |      |
|-------|--------------------------------|-----------------------------|------------|--------------------------------|--------|------|
| Model |                                | Unstandardized Coefficients |            | Standardized Coefficients Beta | t      | Sig. |
|       |                                | B                           | Std. Error |                                |        |      |
| 1     | (Constant)                     | .551                        | .110       |                                | 5.016  | .000 |
|       | enhancement of risk management | .660                        | .051       | .658                           | 13.064 | .000 |

a. Dependent Variable: management of health, safety

The relapse examination comes about for Theory H2 give clear and measurably noteworthy prove supporting the proposed relationship between the administration of wellbeing, security, and security inside offices administration and the upgrade of hazard administration at SABIC amid the COVID-19 widespread. Through looking at the Demonstrate Rundown, ANOVA, and Coefficients tables, it gets to be apparent that wellbeing and security administration hones were indispensably components in reinforcing the organization's generally hazard administration system amid this uncommon open wellbeing crisis.

The Demonstrate Rundown table uncovers an R-value of 0.658, which shows a solid positive relationship between the improvement of chance administration and the administration of wellbeing, security, and security inside offices administration. This proposes that as SABIC upgraded its chance administration hones — by executing unused security conventions, moving forward emergency communication, and altering operational methods — there was a comparing advancement in the administration of wellbeing, security, and security hones inside its facilities.

The R Square esteem of 0.434 uncovers that around 43.4% of the fluctuation in wellbeing, security, and security administration execution can be clarified by the upgrades made in hazard administration. Whereas lower than the fluctuation clarified in Speculations H1 and the by and large demonstrate, this remains a considerable extent, particularly considering the intrinsically multifaceted nature of wellbeing and security administration in a huge mechanical setting. It infers that about half of the enhancements watched in the organization's wellbeing and security administration amid the widespread can be straightforwardly ascribed to the chance administration measures presented in reaction to COVID-19.

The Balanced R Square esteem of 0.431 closely adjusts with the R Square, affirming the strength of the demonstrate and proposing that the relationship watched is not a factual inconsistency but a steady slant discernible over the sample.

The ANOVA table affirms the factual centrality of the relapse demonstrate. The F-value of 170.672, went with by a Sig. (p-value) of 0.000, shows that the show is profoundly measurably critical at the 0.05 level. This result affirms that the relapse show genuinely makes strides the expectation of wellbeing, security, and security administration results when improved hazard administration is considered as the autonomous variable.

From a down to earth angle, this F-test result highlights that chance administration activities taken amid the widespread — such as normal sanitization conventions, arrangement of segregation regions, on-site testing administrations, immunization campaigns, and the dispersal of wellbeing mindfulness materials — had a factually noteworthy impact on fortifying wellbeing and security administration inside SABIC's facilities.

The Coefficients table gives assist clarity on the size and nature of this relationship. The unstandardized coefficient (B) for upgraded chance administration is 0.660, with a standard mistake of 0.051 and an exceedingly critical t-value of 13.064 ( $p = 0.000$ ). This coefficient demonstrates that for each one-unit increment in the improvement of hazard administration score, the wellbeing, security, and security administration score inside offices administration expanded by 0.660 units, holding all other factors constant.

This sizeable positive coefficient underscores the coordinate operational affect that chance administration advancements had on wellbeing and security results. It proposes that as SABIC escalates its pandemic-related chance administration measures, comparing changes in wellbeing and security hones normally taken after — improving worker security, guaranteeing administrative compliance, and supporting operational resilience.

The consistent esteem of 0.551 — too factually critical — speaks to the pattern level of wellbeing, security, and security administration in the nonappearance of upgraded chance administration mediations. Whereas this demonstrates that a few wellbeing and security measures were as of now in put as portion of schedule operational administration, the striking increment

related with improved hazard administration activities highlights the catalytic impact of focused on, crisis-specific techniques on progressing generally work environment security and representative well-being.

These discoveries conclusively back Theory H2, illustrating a factually critical and for all intents and purposes important relationship between wellbeing, security, and security administration inside offices and the improvement of chance administration hones at SABIC amid the COVID-19 widespread. The solid relationship ( $R = 0.658$ ), the noteworthy fluctuation clarified ( $R^2 = 43.4\%$ ), and the exceedingly positive relapse coefficient collectively strengthen the conclusion that chance administration enhancements were instrumental in raising the quality and viability of wellbeing and security administration inside the organization's facilities.

From a key administration viewpoint, these comes about highlight the significance of coordination wellbeing, security, and security administration as a central component inside broader hazard administration systems. The positive representative discernments, as uncovered in this relapse show, recommend that SABIC's endeavors in improving hazard administration deciphered specifically into operational advancements that defended representative wellbeing, secured basic foundation, and kept up organizational versatility amid the crisis.

Furthermore, the quality of this relationship confirms that in mechanical situations — especially those working beneath high-risk, high-complexity conditions — wellbeing and security administration cannot work successfully in segregation. Or maybe, it must be portion of a comprehensive, coordinates chance administration technique that is responsive, energetic, and competent of adjusting to developing dangers, as was effectively illustrated by SABIC amid the COVID-19 pandemic.

In conclusion, the relapse comes about for H2 give compelling prove of the crucial connect between upgraded chance administration and moved forward wellbeing, security, and security hones inside offices administration at SABIC. These discoveries not as it were approving the theory but moreover offer important bits of knowledge for other mechanical organizations looking for to reinforce their operational strength. The experimental prove underpins the proposal that

wellbeing and security administration frameworks ought to be ceaselessly surveyed and improved in parallel with organizational hazard administration systems to guarantee readiness for both anticipated and unanticipated operational challenges.

- **H3: There exists a statistically significant correlation between the continuity of services rendered by facilities management and the enhancement of risk management in SABIC during the crisis.**

**Table 13 Validation of the Third Hypothesis**

| Model Summary |                   |          |                   |                            |                 |                               |      |      |               |
|---------------|-------------------|----------|-------------------|----------------------------|-----------------|-------------------------------|------|------|---------------|
| Model         | R                 | R Square | Adjusted R Square | Std. Error of the Estimate | R Square Change | Change Statistics<br>F Change | df 1 | df 2 | Sig. F Change |
| 1             | .628 <sup>a</sup> | .394     | .391              | .57341                     | .394            | 144.992                       | 1    | 223  | .000          |

a. Predictors: (Constant), enhancement of risk management

| ANOVA <sup>a</sup> |            |                |     |             |         |                   |
|--------------------|------------|----------------|-----|-------------|---------|-------------------|
| Model              |            | Sum of Squares | df  | Mean Square | F       | Sig.              |
| 1                  | Regression | 47.673         | 1   | 47.673      | 144.992 | .000 <sup>b</sup> |
|                    | Residual   | 73.322         | 223 | .329        |         |                   |
|                    | Total      | 120.995        | 224 |             |         |                   |

a. Dependent Variable: continuity of services

b. Predictors: (Constant), enhancement of risk management

| Coefficients <sup>a</sup> |                                |                             |            |                                   |        |      |
|---------------------------|--------------------------------|-----------------------------|------------|-----------------------------------|--------|------|
| Model                     |                                | Unstandardized Coefficients |            | Standardized Coefficients<br>Beta | t      | Sig. |
|                           |                                | B                           | Std. Error |                                   |        |      |
| 1                         | (Constant)                     | .674                        | .109       |                                   | 6.188  | .000 |
|                           | enhancement of risk management | .704                        | .058       | .628                              | 12.041 | .000 |

a. Dependent Variable: continuity of services

The relapse examination comes about for Theory H3 give solid factual affirmation of a noteworthy relationship between the progression of administrations rendered by offices

administration and the upgrade of chance administration at SABIC amid the COVID-19 emergency. Through the nitty gritty yields of the Demonstrate Outline, ANOVA, and Coefficients tables, this examination offers important understanding into how key advancements in chance administration hones empowered the continuous conveyance of basic administrations in a mechanical organization exploring an unstable and questionable environment.

The Show Outline uncovers an R-value of 0.628, showing a decently solid positive relationship between improvements in chance administration and the progression of administrations rendered by offices administration. This recommends that as SABIC heightens its hazard administration procedures — by executing preventive conventions, emergency reaction instruments, and benefit progression plans — the capacity of its offices administration groups to keep up continuous administrations made strides significantly.

The R Square esteem of 0.394 implies that roughly 39.4% of the fluctuation in benefit coherence can be clarified by the changes in hazard administration. This is a significant and significant extent, especially in the setting of large-scale mechanical operations where various outside and inside factors impact benefit conveyance progression. It highlights the imperative part of chance administration mediations as an essential driver behind the organization's capacity to maintain basic administrations such as support, utilities administration, cleaning, and security beneath widespread conditions.

The Balanced R Square of 0.391 is closely adjusted with the R Square, affirming the model's unwavering quality and the solidness of this relationship inside the test. The negligible contrast between these two values encourage fortifies the vigor of the demonstrate and guarantees that the comes about are not an item of test estimate or variable number distortion.

The ANOVA table approves the factual noteworthiness of the relapse demonstrate. The F-value of 144.992, went with by a Sig. (p-value) of 0.000, demonstrates that the demonstrate is exceedingly noteworthy at the 0.05 certainty level. This affirms that the relationship between improvements in hazard administration and the progression of administrations rendered by offices administration is not the result of arbitrary chance, but or maybe an important, precise relationship.

In operational terms, this result illustrates that SABIC's proactive hazard administration measures amid COVID-19 — such as guaranteeing fabric supply chains, presenting elective benefit conveyance components, altering operational workflows, and overseeing benefit progression plans — had a factually critical positive affect on the continuous conveyance of basic administrations over its mechanical offices. The tall F-value reflects the quality of this impact inside the organization's operational context.

The Coefficients table offers assist understanding into the quality and heading of this relationship. The unstandardized coefficient (B) for upgraded chance administration is 0.704, with a standard blunder of 0.058 and a profoundly critical t-value of 12.041 ( $p = 0.000$ ). This coefficient demonstrates that for each one-unit increment in the improvement of chance administration, the coherence of administrations score progresses by 0.704 units, expecting all other variables are constant.

This is a significant impact estimate, uncovering that hazard administration intercessions had an effective and quantifiable effect on benefit progression amid the widespread. It underscores the truth that operational benefit progression was not exclusively the item of existing administration schedules but was essentially fortified through consider, crisis-specific chance administration methodologies. The adaptability to actualize elective benefit strategies, preventive support plans, contactless benefit arrangements, and vigorous emergency communication channels all contributed to this outcome.

The steady esteem of 0.674, too measurably noteworthy, speaks to the standard level of benefit coherence in the nonappearance of upgraded hazard administration hones. Whereas a degree of benefit coherence would have continued without pandemic-specific chance administration improvements, the demonstrate illustrates that it was the consider reinforcing of hazard administration systems that definitively reinforced the organization's capacity to keep up continuous administrations amid the crisis.

The comes about for Speculation H3 offer clear and definitive prove that improved hazard administration had a measurably noteworthy and operationally important positive impact on the coherence of administrations rendered by offices administration at SABIC amid the COVID-19 widespread. The decently solid relationship ( $R = 0.628$ ), significant informative control ( $R^2 =$

39.4%), and critical relapse coefficient affirm the basic part that hazard administration improvements played in defending operational coherence in the confront of phenomenal disruptions.

From a vital administration point of view, these discoveries highlight that benefit progression is not just a work of operational teach but is profoundly interconnected with proactive and coordinates chance administration. SABIC's capacity to keep up continuous basic administrations amid the widespread, as prove by these comes about, was generally driven by its capacity to expect, arrange for, and moderate rising dangers through an energetic and responsive hazard administration framework.

This too fortifies the significance of implanting trade coherence and chance administration plans inside offices administration capacities, guaranteeing that operational administrations can proceed viably beneath a wide extend of troublesome scenarios. The discoveries from this examination propose that other mechanical organizations would advantage from receiving comparative coordinates systems that position offices administration as a key operational accomplice in chance administration and emergency reaction planning.

In conclusion, the relapse examination for Speculation H3 gives compelling experimental bolster for the theory, uncovering a factually critical and for all intents and purposes impactful relationship between the progression of administrations rendered by offices administration and the improvement of chance administration at SABIC amid the COVID-19 emergency. The information assert that changes in hazard administration hones altogether expanded the organization's capacity to provide continuous, solid office administrations amid one of the most challenging operational periods in later history.

These discoveries offer vital lessons for future emergency readiness and operational versatility methodologies, underscoring the esteem of adjusting benefit progression arranging specifically with hazard administration activities to guarantee organizational solidness and representative security in the confront of future disruptions.

## Results

- The overall results of this study clearly demonstrate that facilities management played a pivotal and strategic role in enhancing risk management practices within SABIC Industrial Organization during the COVID-19 pandemic. The analysis consistently revealed a strong, positive, and statistically significant relationship between improvements in risk management and the effectiveness of facilities management operations across various dimensions.
- It became evident that as risk management frameworks were strengthened — particularly through proactive planning, clear safety protocols, and dynamic operational adjustments — the adaptability of facilities management improved substantially. Facilities management was able to swiftly respond to emerging operational challenges, implement new health measures, and reconfigure work environments to align with evolving safety guidelines and business continuity needs.
- Additionally, the findings highlighted that effective health, safety, and security management within facilities was closely linked to the maturity of the organization's risk management practices. Facilities management functions that prioritized employee protection, preventive health measures, and clear safety communication benefited from the structured and responsive risk management systems introduced during the pandemic. This integration not only enhanced operational safety but also contributed to maintaining workforce confidence and organizational stability in a time of uncertainty.
- The study further confirmed that the continuity of essential services provided by facilities management was significantly supported by the enhancement of risk management practices. By embedding risk mitigation strategies within service delivery processes, SABIC was able to minimize operational disruptions, sustain critical utilities and services, and implement alternative service mechanisms when conventional operations were restricted. This outcome emphasized the vital role of risk-informed decision-making in ensuring business continuity in high-pressure, crisis environments.

- Collectively, the results affirm that facilities management functions at SABIC did not operate in isolation but were deeply interconnected with the organization's overall risk management strategy. The alignment between these two operational areas enabled SABIC to effectively navigate the operational, health, and logistical challenges posed by the COVID-19 pandemic. This synergy provided operational resilience, protected employee welfare, and maintained essential services under unprecedented conditions.
- In conclusion, the study establishes that risk management enhancements were a decisive factor in improving the adaptability, safety performance, and service continuity of facilities management during the pandemic. It also highlights the strategic importance of integrating facilities management into organizational risk management frameworks to support resilience and operational excellence in both routine operations and crisis scenarios.

## **Recommendations**

Based on the empirical results and insights drawn from this study, several strategic recommendations are proposed to support SABIC and similar industrial organizations in strengthening their operational resilience and risk preparedness for future crises:

### **1. Institutionalize the Integration of Risk Management and Facilities Management Frameworks**

It is recommended that SABIC formalize the integration of risk management strategies within the operational policies and procedures of facilities management. This includes establishing joint crisis management committees, incorporating risk assessment tools into operational decision-making, and ensuring that facilities management teams are consistently represented in organizational risk planning and emergency preparedness exercises.

### **2. Enhance Crisis Preparedness and Operational Adaptability Training**

The study revealed a strong relationship between enhanced risk management and operational adaptability. Therefore, it is advisable to implement regular training programs for facilities management staff focused on emergency response, crisis leadership, dynamic

scheduling, and rapid operational adjustment protocols. These programs should be scenario-based, simulating various emergency situations beyond health crises to build comprehensive operational agility.

3. **Strengthen Health, Safety, and Security Protocols Through Continuous Improvement**  
Given the significant impact of risk management enhancements on health and safety outcomes, it is recommended that SABIC invest in the continuous development of its health and safety management systems. This includes adopting international best practices, leveraging smart facility management technologies for real-time monitoring, and conducting regular audits and health risk assessments to preemptively identify and address potential hazards.
4. **Develop a Comprehensive Business Continuity and Service Resilience Strategy**  
The findings highlight the importance of maintaining uninterrupted service delivery under crisis conditions. SABIC should develop and periodically update a comprehensive business continuity plan that explicitly addresses facilities management functions. This plan should outline alternative service delivery mechanisms, supply chain contingency plans, and resource prioritization frameworks for essential services during operational disruptions.
5. **Document and Institutionalize Lessons Learned from the COVID-19 Experience**  
To sustain long-term operational resilience, it is recommended that SABIC systematically document the lessons learned from its COVID-19 pandemic response, particularly within facilities management operations. These insights should be embedded into organizational policies, employee handbooks, and training modules to ensure institutional memory and preparedness for future emergencies.
6. **Adopt Smart Facilities Management Technologies to Support Risk Mitigation**  
The organization should consider integrating smart technologies such as IoT-based facility monitoring, automated maintenance systems, and digital risk assessment platforms. These tools can enhance the speed and accuracy of risk identification, operational decision-making, and service continuity management, contributing to greater operational resilience in both routine and crisis conditions.
7. **Promote a Culture of Operational Resilience Across the Organization**  
Finally, it is essential to cultivate a workplace culture that values operational adaptability, health and safety consciousness, and risk awareness. This can be achieved by involving

employees at all levels in risk management processes, recognizing exemplary crisis response behaviors, and maintaining transparent communication channels during emergency situations.

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## **Appendix**

### **Questionnaire**

This questionnaire aims to gather the opinions of employees within SABIC Industrial Organization regarding the role of facilities management in enhancing risk management, particularly during the COVID-19 pandemic. Your valuable responses will contribute to identifying strengths and areas for improvement in operational adaptability, health and safety management, service continuity, and risk management within facilities management.

Your participation is voluntary, and all responses will be treated with complete confidentiality and used solely for academic and research purposes.

Please answer all sections carefully by selecting the most appropriate option that reflects your opinion.

Thank you for your time and valuable cooperation.

## Section One: Demographic Information

### 1. Gender:

- ☐ Male
- ☐ Female

### 2. Age Group:

- ☐ Less than 30 years
- ☐ 30 – 39 years
- ☐ 40 – 49 years
- ☐ 50 years and above

### 3. Educational Qualification:

- ☐ High School or Below
- ☐ Diploma
- ☐ Bachelor's Degree
- ☐ Postgraduate

### 4. Work Experience:

- ☐ Less than 5 years
- ☐ 5 – 10 years
- ☐ More than 10 years

### 5. Work Location Type:

- ☐ Office-based
- ☐ Site-based
- ☐ Remote
- ☐ Other: \_\_\_\_\_

## Section Two: Questionnaire Statements

| statement                                                                                                                                     | Strongly Agree | Agree | Neutral | Disagree | Strongly Disagree |
|-----------------------------------------------------------------------------------------------------------------------------------------------|----------------|-------|---------|----------|-------------------|
| <b>Operational Adaptability of Facilities Management</b>                                                                                      |                |       |         |          |                   |
| 1. Facilities management adapted swiftly to operational changes during COVID-19.                                                              |                |       |         |          |                   |
| 2. There were clear procedures to modify facility operations in emergencies.                                                                  |                |       |         |          |                   |
| 3. The organization's facilities management showed flexibility in resource allocation during crises.                                          |                |       |         |          |                   |
| 4. Facilities management adjusted work schedules and spaces effectively to meet health protocols.                                             |                |       |         |          |                   |
| 5. Operational plans of facilities management were reviewed and updated regularly during the pandemic.                                        |                |       |         |          |                   |
| <b>Management of Health, Safety, and Security within Facilities Management</b>                                                                |                |       |         |          |                   |
| 6. Facilities management implemented effective health and safety measures during COVID-19.                                                    |                |       |         |          |                   |
| 7. Regular sanitization and disinfection procedures were applied across all facilities.                                                       |                |       |         |          |                   |
| 8. Safety guidelines and awareness materials were clearly communicated to employees.                                                          |                |       |         |          |                   |
| 9. The company provided designated areas for COVID-19 suspected case testing and isolation.                                                   |                |       |         |          |                   |
| 10. The company supported employees in receiving the COVID-19 vaccine by providing designated areas or collaborating with health authorities. |                |       |         |          |                   |
| <b>The Continuity of Services Rendered by Facilities Management</b>                                                                           |                |       |         |          |                   |
| 11. Essential services by facilities management remained uninterrupted during COVID-19.                                                       |                |       |         |          |                   |

|                                                                                                     |  |  |  |  |  |
|-----------------------------------------------------------------------------------------------------|--|--|--|--|--|
| 12. Alternative service delivery methods were introduced when direct access was restricted.         |  |  |  |  |  |
| 13. Communication with service users was effectively maintained during the crisis.                  |  |  |  |  |  |
| 14. Facilities management effectively managed supply chains for critical materials.                 |  |  |  |  |  |
| 15. Preventive maintenance services were sustained without major disruption.                        |  |  |  |  |  |
| <b>Enhancement of Risk Management</b>                                                               |  |  |  |  |  |
| 16. Facilities management contributed to identifying and assessing new risks during the pandemic.   |  |  |  |  |  |
| 17. A clear risk management plan was integrated within facilities management procedures.            |  |  |  |  |  |
| 18. Facilities management teams were actively involved in decision-making regarding risk responses. |  |  |  |  |  |
| 19. Lessons learned from COVID-19 were documented to improve future risk management.                |  |  |  |  |  |
| 20. Facilities management enhanced its crisis preparedness following the pandemic experience.       |  |  |  |  |  |