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**Supply Chain and Logistics in Project Management for SABIC Basic Industries in Saudi
Arabia**

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Abstract

The efficiency and effectiveness of supply chain and logistics management have become crucial determinants of success in project-based industries, particularly in Saudi Arabia's Basic Industries sector. This research paper explores the supply chain and logistics strategies employed by SABIC, a leading Saudi conglomerate operating in the Basic Industries sector, to drive the success of its project-based operations.

The study highlights the multifaceted approach adopted by SABIC, which includes supplier relationship management, inventory optimization, transportation and logistics optimization, digital transformation, and talent development. These strategies aim to address the unique challenges faced by Basic Industries projects in Saudi Arabia, such as geographical constraints, supplier diversification, regulatory compliance, volatility in demand and pricing, talent shortages, and sustainability concerns.

The paper emphasizes the strategic importance of effective supply chain and logistics management in enabling timely delivery, cost optimization, quality assurance, risk mitigation, and overall operational efficiency for project-based organizations in the Basic Industries sector. SABIC's comprehensive approach serves as a model for other companies in the region,

demonstrating how the integration of supply chain and logistics practices can contribute to the broader economic development of Saudi Arabia.

The research findings provide valuable insights for project managers, supply chain professionals, and decision-makers in the Basic Industries sector, highlighting the critical role of supply chain and logistics management in driving project success and sustaining competitive advantage in a dynamic and challenging market environment.

الملخص:

أضحت كفاءة وفعالية إدارة سلاسل التوريد واللوجستيات محددات حاسمة للنجاح في الصناعات القائمة على المشاريع، وخاصة في قطاع الصناعات الأساسية في المملكة العربية السعودية. تستكشف هذه الورقة البحثية استراتيجيات سلاسل التوريد واللوجستيات التي تتبناها شركة سابك، وهي مجموعة سعودية رائدة تعمل في قطاع الصناعات الأساسية، لتحقيق نجاح عملياتها القائمة على المشاريع.

تسلط الدراسة الضوء على النهج المتعدد الجوانب الذي تتبناه شركة سابك، والذي يشمل إدارة علاقات الموردين، وتحسين المخزون، وتحسين النقل واللوجستيات، والتحول الرقمي، وتطوير المواهب. تهدف هذه الاستراتيجيات إلى معالجة التحديات الفريدة التي تواجهها مشاريع الصناعات الأساسية في المملكة العربية السعودية، مثل القيود الجغرافية، وتنوع الموردين، والامتثال التنظيمي، وتقلبات الطلب والأسعار، ونقص المواهب، والاستدامة.

تؤكد الورقة على الأهمية الاستراتيجية للإدارة الفعالة لسلاسل التوريد واللوجستيات في تمكين التسليم في الوقت المناسب، وتحسين التكاليف، وضمان الجودة، وتخفيف من المخاطر، وكفاءة العمليات الشاملة للمنظمات القائمة على المشاريع في قطاع الصناعات الأساسية. يعد النهج الشامل لشركة سابك نموذجًا لشركات أخرى في المنطقة، مما يوضح كيف يمكن أن يساهم دمج ممارسات سلاسل التوريد واللوجستيات في التنمية الاقتصادية الأوسع للمملكة العربية السعودية.

توفر نتائج البحث رؤى قيمة لمديري المشاريع ومتخصصي سلاسل التوريد والقادة في قطاع الصناعات الأساسية، مما يساهم في الدور الحاسم لإدارة سلاسل التوريد واللوجستيات في تحقيق نجاح المشاريع والحفاظ على ميزة تنافسية في بيئة السوق الديناميكية والصعبة.

Chapter 1

Introduction:

The rapidly changing environment of business, especially in the scope of project-based industries, has proved that the optimization of the supply chain as well as the management of its supplies have become one of the key factors for success in different businesses. This is especially true for the Basic Industries, which is an important branch of the Saudi Arabian economy and to execute these projects On-Time, within budget and to the required quality standards a proper and efficient supply chains & logistics strategies are the key success factors. (Samarkanayake, & Toncich 2007)

Supply chain management and logistics in project management, therefore, entails the process of designing and co-co-ordinating the procurement as well as the distribution of the whole bunch of project materials together with informational flows from the point of origins to the place of use or completion of the project. It implies that a complex system of activities to be well-coordinated and needs a close cooperation of several players in the supply chain system such as supplier, vendors, carrier, and internal implementation team.

Effective supply chain and logistics management in project settings can bring about numerous benefits, such as: (Al-Shahrani, A. A. A. ; Al-Duwaik, & Afifi, A. A. A 2018)

1. **Cost Optimization:** In essence, by controlling procurement, which in other words is acquisition, inventory, and transportation, costs which are inherent in acquisition and transportation of materials can be slightly controlled hence improving the profit on the particular project.
2. **Timely Delivery:** The adoption of efficient logistics and supply chain management means and resources are obtained at the right time and place hence assisting the project teams in meeting deadlines and other targets.

3. Quality Assurance: It is critical to note that proper management of supplies, of which various suppliers are selected upon, improves the quality of material used in a project and consequently the performance of the project.

4. Risk Mitigation: The following sub-sections enumerated examine how assessment of risks is effectively carried out during project development in order to provide proactive supply chain and logistics planning which will lead to the improvement of the resilience of the project.

5. Operational Efficiency: Managing and improving the supply chain and the flow of the logistical function can improve efficiency, decrease waste, and improve resource utilization throughout the conception, design, and implementation of a project.

One of projects that apply Supply Chain and Logistics is Sabic, a Saudi Arabia-based conglomerate Operating in the Basic Industries sector, has duly identified Supply Chain and Logistics management as vital to the success of its project-based business model. Guaranteeing and improving the supply chain and logistics management have shifted to the foreground as the company enlarges its presence in the area. This study is informed by the social cognitive theory as postulated by (Alshabana 2016)

The Basic Industries sector of Saudi Arabia that includes industries including energy companies. Such an industry, the petrochemicals, minerals and metals, remains an important leg of the country's economic diversification strategy. These industries usually comprise of very extensive works which are characterized by large projects operations that require supply chain and excellent logistics to ensure timely delivery, at the lowest cost and with superior quality as stated by (Al-Shahrani, Al-Duwaik, & Afifi, A. A. A. 2018).

This paper briefly recounts how supply chain and logistics was managed in Sabic's Basic Industries projects by looking deep into features of the Saudi Arabian context. Some key elements of this strategy include: (Notably, Alshabana 2016) has pointed out the following hazards of the social media;

1. Supplier Relationship Management: Currently, Sabic has fostered strategic partnerships and relationships with the most critical suppliers to ensure that these partners' competencies are harnessed to optimize the supply chain operating efficiency.

2. **Inventory Optimization:** It has achieved efficient supply chain management through implementing modern technology in the control of inventories, thus making the strategic materials easily available while avoiding the accumulation of large stocks, which are costly to store, and therefore have a positive effect on working capital.

3. **Transportation and Logistics Optimization:** Sabic has also considered flexibility within some of the facets of the transport logistics key, resulting to usage of combined transport such as the use of road, rail and sea transport to develop transport networks to ensure timely delivery, reduced emissions to the environment and overall reduced costs of transport.

1. **Digital Transformation:** The company has embraced digital technologies, such as supply chain analytics, predictive maintenance, and blockchain-enabled traceability, to enhance visibility, agility, and responsiveness across its supply chain and logistics operations.
2. **Talent Development:** Sabic recognizes the importance of building a skilled and knowledgeable workforce in supply chain and logistics management, and has invested in training and development programs to upskill its employees.

By addressing these key aspects of supply chain and logistics management, Sabic aims to strengthen its position in the Basic Industries sector, delivering projects with greater efficiency, cost-effectiveness, and quality, while also contributing to the broader economic development of Saudi Arabia(Alshabana, A. M. O. 2016)

the effective management of supply chain and logistics in project-based industries, such as Basic Industries in Saudi Arabia, is a critical success factor. Sabic's comprehensive approach to optimizing its supply chain and logistics practices serves as a testament to the company's commitment to delivering excellence and driving sustainable growth in the region (Al-Shahrani, A. A. A., Al-Duwaik, & Afifi, A. A. A 2018).

Research problem:

The success of these projects is heavily dependent on the ability to manage the supply chain and logistics processes effectively. Disruptions in the supply chain, delays in material deliveries, or inefficient logistics can have significant impacts on project timelines, budgets, and overall quality. As such, organizations in the Basic Industries sector must have a deep understanding of the unique challenges and constraints they face in this domain.

Despite the importance of supply chain and logistics management, organizations operating in the Basic Industries sector in Saudi Arabia often face a range of complex challenges, including:

1. **Geographical Constraints:** Saudi Arabia's vast geographic expanse and limited transportation infrastructure can pose significant logistical challenges, particularly in terms of moving materials and equipment to remote project sites.
2. **Supplier Diversification:** Basic Industries projects often require specialized materials and equipment sourced from a global network of suppliers. Coordinating and managing these diverse supply sources can be a complex undertaking.
3. **Regulatory Compliance:** The Basic Industries sector is subject to stringent regulatory requirements, which can add layers of complexity to supply chain and logistics operations, particularly when dealing with cross-border shipments and customs clearance.
4. **Volatility in Demand and Pricing:** Fluctuations in global commodity prices and shifts in market demand can significantly impact the supply and pricing of raw materials, forcing organizations to adapt their supply chain and logistics strategies accordingly.
5. **Talent Shortage:** The specialized nature of supply chain and logistics management in the Basic Industries sector requires a highly skilled workforce, which can be challenging to attract and retain in the Saudi Arabian market.
6. **Sustainability and Environmental Concerns:** Increasing focus on environmental sustainability and carbon footprint reduction has added additional layers of complexity to

supply chain and logistics operations, requiring organizations to explore more ecofriendly solutions.

Research importance:

This research study holds significant importance in the context of the Basic Industries sector in Saudi Arabia, particularly in the realm of supply chain and logistics management. The findings of this study will provide a comprehensive understanding of the challenges and opportunities that organizations in this vital sector face, thereby equipping them with the necessary insights to develop and implement effective supply chain and logistics strategies.

Firstly, this research will contribute to a deeper understanding of the unique dynamics and complexities inherent in the Basic Industries sector of Saudi Arabia. The Basic Industries sector, which encompasses industries such as petrochemicals, minerals, and metals, is a crucial pillar of the country's economic diversification efforts.

These industries often involve large-scale, project-based operations that require meticulous planning, coordination, and execution. The research will shed light on the specific supply chain and logistics-related challenges that organizations in this sector face, such as geographical constraints, supplier diversification, and regulatory compliance.

By examining the impact of supply chain management practices on project performance, this study will provide valuable insights that can guide organizations in the Basic Industries sector to optimize their supply chain and logistics strategies. The research will investigate the influence of various supply chain management practices, including supplier relationship management, inventory optimization, transportation and logistics optimization, digital transformation, and talent development, on the overall performance of projects. These insights will enable organizations to develop and implement tailored solutions that address their unique challenges and enhance their competitive advantage.

Moreover, this research will contribute to the existing body of literature by exploring the moderating role of contextual factors, such as geographical constraints, supplier diversification, and regulatory compliance, in the relationship between supply chain management practices and project performance. This perspective is particularly relevant in the Saudi Arabian context, where the Basic Industries sector operates within a unique geographic, political, and regulatory landscape. By understanding how these moderating factors influence the effectiveness of supply

chain and logistics strategies, organizations can better navigate the complexities of the industry and make more informed decisions.

The findings of this research will not only benefit individual organizations but also have broader implications for the industry and the national economy. The Basic Industries sector is a crucial component of Saudi Arabia's economic diversification efforts, and its success is vital for the country's long-term sustainable development. By providing insights that can enhance the competitiveness and resilience of this sector, the research can guide policymakers and industry leaders in developing supportive policies and initiatives.

For instance, the research findings may inform the development of targeted infrastructure investments, such as improvements in transportation networks, logistics hubs, and digital infrastructure, which can facilitate more efficient and effective supply chain and logistics operations. Additionally, the research may inform the design of training and capacity-building programs to enhance the skills and capabilities of supply chain and logistics professionals in the Basic Industries sector, ensuring a steady supply of talent to drive innovation and continuous improvement.

Furthermore, the research can contribute to the formulation of regulatory frameworks and support mechanisms that address the unique challenges faced by organizations in the Basic Industries sector. By understanding the impact of regulatory compliance on supply chain and logistics management, policymakers can develop policies and incentives that strike a balance between maintaining industry standards and fostering a business-friendly environment.

this research study holds immense importance in the context of the Basic Industries sector in Saudi Arabia. It will provide a comprehensive understanding of the supply chain and logistics management challenges and opportunities, equipping organizations with the knowledge to develop and implement effective strategies. The research will also contribute to the existing literature by exploring the moderating role of contextual factors, and its findings can guide policymakers and industry leaders in developing supportive policies and initiatives to enhance the competitiveness and resilience of this vital sector. Ultimately, the successful implementation

of these insights can have far-reaching implications for the economic growth and diversification of Saudi Arabia.

Research objectives :

The primary objective of this research study is to examine the impact of supply chain management practices on project performance in the Basic Industries sector of Saudi Arabia. Specifically, the study aims to achieve the following objectives:

1. Identify and assess the key supply chain management practices adopted by organizations in the Basic Industries sector of Saudi Arabia.

The research will investigate the specific supply chain management practices employed by companies operating in the Basic Industries sector, such as:

- Supplier relationship management
- Inventory optimization
- Transportation and logistics management
- Digital transformation initiatives
- Talent development and training programs

Through a combination of surveys, interviews, and secondary data analysis, the study will provide a comprehensive understanding of the current state of supply chain management practices in the sector, including the prevalence, implementation strategies, and perceived effectiveness of these practices.

2. Evaluate the impact of supply chain management practices on various dimensions of project performance.

The study will assess the relationship between the identified supply chain management practices and different aspects of project performance, including:

- Cost performance: The ability to complete projects within the planned budget and minimize cost overruns.
- Time performance: The ability to deliver projects within the scheduled timeframe and meet project deadlines.

- Quality performance: The ability to meet or exceed the quality standards and specifications of the project.
- Stakeholder satisfaction: The level of satisfaction among key project stakeholders, such as clients, end-users, and project team members.

By examining these linkages, the research will provide empirical evidence on the contribution of supply chain management practices to the overall performance of projects in the Basic Industries sector.

3. Investigate the moderating effects of geographical constraints, supplier diversification, and regulatory compliance on the relationship between supply chain management practices and project performance.

The study will explore how the specific contextual factors faced by organizations in the Basic Industries sector of Saudi Arabia may influence the effectiveness of supply chain management practices in enhancing project performance. The research will focus on the following moderating factors:

- Geographical constraints: The impact of Saudi Arabia's vast geography, limited infrastructure, and harsh environmental conditions on the implementation and effectiveness of supply chain management practices.
- Supplier diversification: The influence of the availability, reliability, and geographical distribution of suppliers on the ability of organizations to manage supply chain disruptions and ensure timely material availability.
- Regulatory compliance: The impact of the complex regulatory environment, including industry standards, local content requirements, and environmental regulations, on the organizations' supply chain management strategies and their subsequent effect on project performance.

By investigating these moderating factors, the study will provide a more nuanced understanding of the contingencies that shape the relationship between supply chain management practices and project performance in the Basic Industries sector.

4. Develop a conceptual framework that explains the linkages between supply chain management practices, project performance, and the moderating factors.

Based on the findings from the research, the study will propose a conceptual framework that illustrates the relationships between the key variables. This framework will serve as a valuable tool for both academics and practitioners, providing a holistic view of the factors influencing project performance in the Basic Industries sector.

The conceptual framework will integrate the insights gained from the study, including:

- The specific supply chain management practices that have the most significant impact on project performance.
- The direct and indirect relationships between supply chain management practices and various dimensions of project performance.
- The moderating effects of geographical constraints, supplier diversification, and regulatory compliance on these relationships.

The development of this conceptual framework will contribute to the theoretical understanding of supply chain management and project performance in the context of the Basic Industries sector, while also serving as a practical guide for organizations in the industry.

5. Provide actionable recommendations for organizations in the Basic Industries sector to enhance their supply chain management practices and improve project performance.

The research findings will be translated into practical recommendations that can be implemented by organizations in the Basic Industries sector of Saudi Arabia. These recommendations will cover areas such as:

- Strategies for strengthening supplier relationships and improving supplier reliability.
- Approaches to optimizing inventory management and logistics operations.
- Guidelines for effective deployment of digital technologies and data analytics in supply chain management.
- Talent management practices to develop and retain skilled supply chain professionals.

- Recommendations for navigating geographical constraints and regulatory compliance requirements.

The study will also identify specific industry-level interventions, such as policy changes, infrastructure development, or collaborative initiatives, that can create a more conducive environment for the adoption of effective supply chain management practices and the improvement of project performance in the Basic Industries sector.

By achieving these research objectives, the study will contribute to the existing body of knowledge on supply chain management and project performance, while also providing valuable insights and practical guidance to organizations operating in the Basic Industries sector of Saudi Arabia. The findings of this research will be particularly relevant and timely, as the sector plays a crucial role in the Kingdom's economic diversification and sustainable development agenda

Research questions:

1. What are the current supply chain and logistics practices employed by Sabic and other key players in the Basic Industries sector in Saudi Arabia?
2. What are the main challenges and constraints faced by these organizations in managing their supply chain and logistics processes?
3. What strategies and best practices have Sabic and other organizations adopted to address these challenges and optimize their supply chain and logistics performance?
4. How do the supply chain and logistics management practices of Sabic and other industry players impact the performance of their projects in terms of cost, quality, and timely delivery?
5. What recommendations can be made to improve supply chain and logistics management in the Basic Industries sector in Saudi Arabia, and how can these improvements contribute to the overall success and growth of the industry?

Study Hypotheses:

The proposed research study on the impact of supply chain management practices on project performance in the Basic Industries sector of Saudi Arabia will be guided by the following hypotheses:

H1: VAT implementation has a significant impact on the profitability of SMEs in Saudi Arabia.

- This hypothesis examines the direct financial impact of VAT on SMEs, including changes in profit margins and cost structures.

H2: Effective supply chain management practices mitigate the adverse effects of VAT on SMEs.

- This hypothesis explores how supply chain strategies, such as inventory management and supplier relationships, influence the impact of VAT on SMEs.

H3: SMEs that adopt agile project management practices are better able to manage the challenges posed by VAT implementation.

- This hypothesis investigates the role of agile methodologies in helping SMEs adapt to the new tax environment.

H4: VAT compliance requirements increase the administrative burden on SMEs, affecting their operational efficiency.

- This hypothesis assesses the impact of VAT-related compliance on the administrative processes and efficiency of SMEs.

The scientific theory used to prepare the research

The scientific theory used to prepare the research in the document is quantitative research. The structure, data collection methods, and analysis approach described in the document all point to quantitative research as the primary scientific theory underlying the preparation of this research paper.

Chapter 2

introduction

Supply chain management (SCM) and logistics are integral components of project management, especially in the context of basic industries such as manufacturing and production. This literature review examines the integration of SCM and logistics within project management frameworks, with a particular focus on basic industries in Saudi Arabia. The review synthesizes findings from a variety of sources to present a comprehensive understanding of the current state of SCM and logistics in project management.

literature review:

Integration of Production Planning, Project Management, and Logistics Systems

Samaranayake and Toncich (2007) discuss the critical integration of production planning, project management, and logistics systems within supply chain management. Their research emphasizes the importance of synchronized operations to achieve seamless workflow and efficiency. The integration facilitates real-time data sharing, which helps in making informed decisions, reducing delays, and improving overall project performance. For SABIC, adopting such integrated systems could lead to significant improvements in managing its extensive supply chain network.

Project Management in Logistics and Supply Chain Management

Hartel (2019) explores the role of project management within logistics and supply chain management. The study highlights the complexity of coordinating various elements of the supply chain and the necessity of robust project management practices to handle these challenges effectively. Hartel emphasizes strategic planning, risk management, and the importance of maintaining flexibility to adapt to unforeseen circumstances. For SABIC, employing advanced project management techniques could streamline logistics operations, enhancing efficiency and reducing costs.

Agile Project Management in Logistics and Supply Chain Management

In his later work, Hartel (2022) introduces the concept of Agile Project Management tailored for logistics and supply chain management. Agile methodologies promote adaptability, continuous improvement, and rapid response to changes, which are crucial for dynamic supply chain environments. For a large organization like SABIC, implementing Agile practices can lead to improved responsiveness to market changes and internal project demands, fostering a more resilient and competitive supply chain.

Forecasting and Project Management Characteristics of Supply Chain Management

Smith and Offodile (2007) delve into the forecasting and project management characteristics

essential for effective supply chain management. Accurate forecasting is vital for anticipating demand and managing resources efficiently. Their study suggests that integrating forecasting with project management tools can enhance the predictability and reliability of supply chain operations. For SABIC, leveraging advanced forecasting techniques integrated with project management could optimize inventory levels, reduce lead times, and improve customer satisfaction.

Comprehensive View on Operations, Logistics, and Supply Chain Management

Zijm et al. (2019) provide a comprehensive overview of operations, logistics, and supply chain management. Their work covers a wide range of topics, including the latest trends and technologies in the field. They emphasize the importance of adopting innovative solutions and technologies to stay competitive. For SABIC, staying abreast of the latest developments and integrating cutting-edge technologies into their supply chain operations could drive significant improvements in efficiency, sustainability, and overall performance.

The Role of Saudi Human Resources in Enhancing Productivity

Al-Shubana (2016) focuses on the role of Saudi human resources in improving productivity in industrial institutions. The study emphasizes the importance of training and developing employees to enhance their efficiency and increase productivity. For SABIC, investing in human resource development can significantly improve supply chain and logistics efficiency, leading to overall performance enhancement.

Strategic Framework for Developing Information Security

Al-Qahtani et al. (2014) discuss a strategic framework for developing information security to enhance national security in Saudi Arabia, with a specific focus on SABIC. Information security is a critical component of supply chain management, as protecting sensitive data and information can shield the supply chain from cyber threats. Implementing robust information security strategies can enhance the efficiency and safety of logistics and supply chain operations at SABIC.

Evaluation of Major Industrial Companies' Efforts in Environmental Security

Al-Shahrani et al. (2018) evaluate the efforts of major industrial companies, including SABIC, in maintaining environmental security. The study suggests that adhering to environmental standards

can enhance the sustainability of logistics and supply chain operations. For SABIC, environmental initiatives can improve the company's image and reduce its negative environmental impact, supporting sustainable operations and boosting efficiency.

Effectiveness of Human Resources Planning in Achieving Job Security

Al-Huwaish et al. (2013) investigate the effectiveness of human resources planning in achieving job security. Effective human resources planning can contribute to improved job stability and increased productivity. For SABIC, efficient human resources planning can enhance coordination between various parts of the supply chain and logistics, leading to overall operational efficiency.

The integration of supply chain and logistics with project management is vital for the success of large industrial enterprises like SABIC. The literature reviewed highlights the importance of integrated systems, strategic project management, agile methodologies, and advanced forecasting in enhancing supply chain efficiency. By adopting these practices, SABIC can achieve better coordination, reduce costs, and improve overall operational performance, maintaining its competitive edge in the industry.

The integration of SCM and logistics within project management is vital for the success of basic industries in Saudi Arabia. The literature underscores the importance of synchronizing production planning, project management, and logistics systems to enhance operational efficiency and responsiveness. Agile project management methodologies and accurate forecasting are critical for managing complex supply chains and minimizing risks. Additionally, the development of human resources and the implementation of robust information security measures are essential for maintaining productivity and protecting supply chain integrity.

Sustainable practices and strategic human resource planning further contribute to the overall success of industrial projects. By adopting these best practices, Saudi Arabia's basic industries can achieve operational excellence and maintain a competitive edge in the global market.

Theoretical Framework

Introduction

The implementation of Value-Added Tax (VAT) in Saudi Arabia represents a significant shift in the country's fiscal policy, aiming to diversify government revenue sources away from oil dependence. This research investigates the impact of VAT on small and medium-sized enterprises (SMEs) in Saudi Arabia, focusing on supply chain logistics and project management. This theoretical framework outlines the foundational theories and concepts that underpin the study.

Theories on Taxation and Economic Behavior

VAT's impact on SMEs can be examined through the lens of several economic theories:

1. Tax Incidence Theory:

- This theory analyzes how the burden of a tax, such as VAT, is shared between buyers (consumers) and sellers (businesses).
- For SMEs, understanding tax incidence is crucial in determining whether they can pass on the VAT cost to consumers, or if they have to absorb it, which can significantly impact their profitability.
- Factors that influence tax incidence include the price elasticity of demand, the market structure, and the relative bargaining power of buyers and sellers.
- SMEs with more price-sensitive customers or greater competition may have less ability to pass on the VAT cost, putting more pressure on their profit margins(*Chuang, S. H. 2021*).

2. Compliance Theory:

- This theory focuses on the factors that affect businesses' adherence to tax regulations, such as VAT.
- For SMEs, the introduction of VAT can create new administrative and compliance requirements, which can be particularly burdensome due to their limited resources and expertise.
- Compliance costs, such as record-keeping, filing, and remittance, can disproportionately impact smaller businesses and influence their overall tax compliance behavior.
- Factors like the complexity of the VAT system, access to tax information and guidance, and the effectiveness of tax enforcement can all affect SMEs' compliance with VAT regulations (*Taing, H. B., & Chang, Y. 2021*)

3. Behavioral Economics:

- This theory examines how psychological, social, and emotional factors influence economic decision-making, including responses to tax policies like VAT.
- For SMEs, behavioral responses to VAT can manifest in various ways, such as changes in pricing strategies, investment decisions, and overall business behavior.
- Factors like loss aversion, anchoring, and heuristics can affect how SMEs perceive and react to the introduction of VAT, potentially leading to unintended economic consequences.
- Understanding these behavioral responses can provide insights into the broader impact of VAT on SMEs, beyond the purely economic considerations (*Angner, E. 2020*).

By analyzing the impact of VAT through these theoretical lenses, policymakers and researchers can gain a more comprehensive understanding of the challenges and

opportunities faced by SMEs, and develop more targeted and effective policies to support this important segment of the economy.

Advantages and Disadvantages of Applying Economic Theories to Examine the Impact of VAT

Advantages:

1. Comprehensive Analysis:

- Applying economic theories, such as tax incidence theory, compliance theory, and behavioral economics, can provide a holistic understanding of the impact of VAT on SABIC's supply chain and logistics operations.

- These theories can help analyze the multifaceted implications of VAT, beyond just the direct financial impact, and uncover potential unintended consequences.

2. Informed Decision-Making:

- Understanding the theoretical frameworks can assist SABIC in making more informed decisions regarding the management of their supply chain and logistics operations in response to the introduction of VAT.

- This knowledge can help SABIC anticipate and mitigate potential challenges, as well as identify opportunities to optimize their operations.

3. Identification of Vulnerabilities:

- Analyzing the impact of VAT through the lens of economic theories can help SABIC identify specific vulnerabilities within their supply chain and logistics operations, particularly for small and medium-sized suppliers and partners.

- This information can guide targeted interventions and support measures to strengthen the resilience of SABIC's supply chain.

4. Benchmarking and Comparative Analysis:

- Applying these economic theories can provide a standardized framework for SABIC to benchmark their performance and compare their supply chain and logistics strategies with industry peers or best practices.

- This can facilitate the identification of areas for improvement and the adoption of more effective practices.

Disadvantages:

1. Data Availability and Reliability:

- Applying these economic theories may require extensive data collection and analysis, which can be challenging, especially for smaller supply chain partners or in the context of a rapidly evolving VAT environment.

- The availability and reliability of the necessary data may be a limiting factor in the application of these theories.

2. Complexity and Interpretation:

- The economic theories involved can be complex, and their application to the specific context of SABIC's supply chain and logistics operations may require specialized expertise and careful interpretation.

- Oversimplification or misinterpretation of the theoretical models could lead to flawed conclusions and decisions.

3. Generalization Challenges:

- While these economic theories provide a general framework, the specific dynamics and characteristics of SABIC's supply chain and logistics operations may not align perfectly with the assumptions or predictions of the theories.

- Careful consideration of the contextual factors and potential limitations of the theoretical models is necessary to ensure the relevance and applicability of the findings.

4. Resource Constraints:

- Conducting in-depth analyses using these economic theories may require significant time, financial, and human resources, which could be a challenge for SABIC, especially in the short term as they adapt to the new VAT regime.

- Balancing the benefits of such analyses with the resource constraints may be a key consideration.

Overall, the application of economic theories to examine the impact of VAT on SABIC's supply chain and logistics operations can provide valuable insights, but requires careful

planning, data management, and interpretation to ensure the findings are actionable and relevant within the specific context of SABIC's operations in Saudi Arabia.

2. Theories on Project Management

Project management theories provide insights into how SMEs manage projects in the context of VAT implementation:

1. Project Complexity Theory:

- This theory addresses the inherent complexity involved in managing projects, which can be influenced by factors such as the number of stakeholders, the level of uncertainty, and the interdependencies between project components.
- The implementation of VAT introduces additional layers of complexity for SMEs, including:
 - New compliance requirements and documentation needs, which can increase the administrative burden and project-related tasks.
 - Changes in cash flow management due to VAT-related payment and refund processes, which can impact project budgeting and resource allocation.
 - Potential changes in supplier and customer relationships, which can affect project timelines and resource availability.
- Understanding how SMEs navigate this increased project complexity, and the strategies they employ to manage it, can provide valuable insights into their overall project performance and success under the new tax regime.

- Factors such as project planning, risk management, and the use of project management tools and techniques can be analyzed to assess how SMEs adapt their project management approaches to address the complexities introduced by VAT (*Matveev, Y., Stepanova, T., & Trubetskaya, O. 2021*).

2. Stakeholder Theory:

- Stakeholder theory emphasizes the importance of managing the relationships and interactions between a business and its various stakeholders, including suppliers, customers, shareholders, and regulatory bodies.
- The implementation of VAT affects a wide range of stakeholders for SMEs, and their influence on project outcomes can be significant. These stakeholders include:
 - Suppliers: VAT-related changes in payment terms, documentation requirements, and cash flow management can impact supplier relationships and project timelines.
 - Customers: Adjustments in pricing and invoicing due to VAT can affect customer satisfaction and their engagement in SMEs' projects.
 - Regulatory bodies: Compliance with VAT regulations and reporting requirements can introduce new project-related tasks and responsibilities for SMEs.
- Analyzing how SMEs manage these stakeholder relationships and address their diverse interests in the context of VAT-related projects can provide insights into the factors that contribute to project success or failure.

- Strategies such as effective communication, stakeholder engagement, and collaborative problem-solving can be examined to understand how SMEs navigate the complex stakeholder landscape during VAT implementation (Freudenreich, B., Lüdeke-Freund, F., & Schaltegger, S. 2020).

3. Agile Project Management:

- Agile project management methodologies emphasize flexibility, responsiveness to change, and collaborative decision-making, which can be particularly beneficial in the face of regulatory changes such as VAT implementation.
- SMEs may adopt agile practices to quickly adapt their project management approaches to the evolving VAT requirements and minimize the impact on their ongoing projects.
- Characteristics of agile project management that can be useful for SMEs in the context of VAT include:
 - Iterative and incremental delivery: Breaking down projects into smaller, manageable tasks to accommodate VAT-related changes.
 - Continuous collaboration: Fostering close collaboration with stakeholders to jointly address VAT-induced challenges.
 - Adaptive planning: Regularly reviewing and adjusting project plans and resource allocations to respond to VAT-related developments.
- Examining the adoption and application of agile methodologies by SMEs in managing VAT-related projects can provide insights into their ability to maintain project momentum and adapt to the dynamic changes brought about by the new tax regime. (Marnada, P., Raharjo, T., Hardian, B., & Prasetyo, A. 2022).

Advantages and Disadvantages of Applying Project Complexity Theory, Stakeholder Theory, and Agile Project Management (Thomas, A. 2024).

Advantages:

1. Project Complexity Theory:

- Provides a framework to analyze the multifaceted challenges faced by SABIC in managing projects due to the implementation of VAT, including the impact on
- administrative burden, cash flow management, and supplier/customer relationships.
- Allows researchers to explore how SABIC's project management practices, such as planning, risk management, and the use of tools, are adapted to address the increased complexity.
- Offers insights into the strategies SABIC employs to navigate the complex project environment and maintain project performance.

2. Stakeholder Theory:

- Enables researchers to examine the diverse interests and influences of SABIC's stakeholders, including suppliers, customers, and regulatory bodies, in the context of VAT-related projects.
- Helps identify how SABIC manages stakeholder relationships and addresses their concerns to ensure successful project outcomes.
- Provides a holistic understanding of the stakeholder dynamics and their impact on SABIC's project management approaches.

3. Agile Project Management:

- Allows researchers to explore how SABIC leverages agile practices, such as iterative delivery, continuous collaboration, and adaptive planning, to quickly adapt to the changing VAT requirements.
- Provides insights into SABIC's ability to maintain project momentum and responsiveness in the face of dynamic regulatory changes.
- Helps understand the effectiveness of agile methodologies in enabling SABIC to navigate the complexities introduced by VAT implementation.

Disadvantages:

1. Project Complexity Theory:

- Complexity theory can be challenging to apply in a specific organizational context, as it requires a deep understanding of the interrelated factors that contribute to project complexity.
- Collecting comprehensive data on the various aspects of project complexity, such as stakeholder involvement, uncertainty, and interdependencies, may be time-consuming and resource-intensive.
- Generalizing the findings from a single case study (SABIC) may be limited, as the complexity factors can vary significantly across different organizations and industries.

2. Stakeholder Theory:

- Identifying and engaging with all relevant stakeholders, especially in a large organization like SABIC, can be a complex and challenging task.

- Obtaining reliable and comprehensive data on stakeholder interests, interactions, and their influence on project outcomes may be difficult.
- Interpreting and balancing the diverse and potentially conflicting stakeholder perspectives can be a subjective exercise, making it challenging to draw definitive conclusions.

3. Agile Project Management:

- Evaluating the effectiveness of agile practices in the context of VAT implementation may be challenging, as there can be multiple confounding factors that influence project success.
- Adapting agile methodologies to the specific organizational culture and project management practices of SABIC may require significant effort and implementation challenges.

- Generalizing the findings on the use of agile practices in SABIC's projects may have limited applicability to other organizations, as the adoption and success of agile approaches can be highly context-dependent.

Overall, the application of these theories can provide valuable insights into SABIC's project management strategies and challenges in the face of VAT implementation. However, researchers should be mindful of the potential limitations and challenges associated with each theory, and employ appropriate data collection and analysis methods to ensure the reliability and generalizability of their findings.

3. Supply Chain Management Theories

Effective supply chain management is critical for SMEs to navigate the challenges posed by VAT. Key theories include:

1. Supply Chain Resilience Theory:

- This theory focuses on the ability of supply chains to adapt and recover from disruptions, such as the introduction of a new tax regime like VAT (*Matveev, Y., Stepanova, T., & Trubetskaya, O. 2021*).
- For SMEs, the implementation of VAT can be seen as a disruptive event that requires adjustments in their supply chain strategies and operations.
- Key aspects of supply chain resilience that are relevant for SMEs dealing with VAT include:
 - Flexibility: The ability to quickly adapt supply chain processes and logistics to accommodate VAT-related changes.

- Redundancy: Maintaining backup suppliers, inventory, and transportation options to mitigate VAT-induced disruptions.
- Collaboration: Fostering strong relationships with supply chain partners to collectively navigate the challenges of VAT.
- Visibility: Enhancing end-to-end supply chain visibility to identify and address VAT-related issues more effectively.
- Analyzing how SMEs develop and leverage these resilience capabilities can provide insights into their ability to maintain supply chain efficiency and competitiveness in the face of VAT.

2. Transaction Cost Economics (TCE):

- TCE examines the costs associated with conducting transactions within a supply chain, including the costs of negotiating, monitoring, and enforcing contracts (*Ketokivi, M., & Mahoney, J. T. 2020*).
- The implementation of VAT introduces additional transactional costs for SMEs, such as:
 - Increased paperwork and documentation requirements for tax compliance.
 - Costs of adapting enterprise resource planning (ERP) systems and accounting processes to handle VAT.
 - Potential changes in supplier and customer relationships due to VAT-related contractual adjustments.
- By analyzing these VAT-induced transaction costs, researchers can better understand the economic impact on SMEs' supply chain operations and their ability to maintain profitability.

- TCE can also shed light on how SMEs might restructure their supply chains or engage in vertical integration to mitigate the transaction costs associated with VAT.

3. Resource-Based View (RBV):

- The RBV suggests that a firm's competitive advantage is derived from its unique resources and capabilities (*Kruesi, M. A., & Bazelmans, L. 2023*).
- In the context of VAT implementation, the ability of SMEs to efficiently manage the changes in their supply chain logistics can be viewed as a strategic capability.
- Key resources and capabilities that SMEs may need to develop to effectively manage VAT in their supply chains include:
 - Tax compliance expertise: Understanding VAT regulations and effectively integrating them into supply chain processes.
 - Data and information management: Enhancing data collection, analysis, and reporting to meet VAT-related documentation requirements.
 - Supply chain agility: Quickly adapting logistics and transportation arrangements to accommodate VAT-driven changes.
 - Supplier and customer relationship management: Fostering collaborative relationships to navigate VAT-related supply chain challenges.
- By identifying the critical resources and capabilities required to manage VAT in their supply chains, SMEs can focus on building and leveraging these competencies to maintain a competitive edge.

By applying these supply chain management theories, researchers and policymakers can gain a deeper understanding of the challenges and opportunities faced by SMEs in navigating the implementation of VAT. This knowledge can inform the development of targeted support mechanisms and policies to help SMEs strengthen their supply chain resilience, manage

transaction costs, and build the necessary capabilities to thrive in a VAT-driven business environment.

Advantages and Disadvantages of Applying Supply Chain Management Theories

Advantages:

2. Supply Chain Resilience Theory:

- Helps identify the key capabilities SABIC Basic Industries needs to develop to adapt and recover from VAT-related supply chain disruptions.
- Provides a framework to analyze SABIC's flexibility, redundancy, collaboration, and visibility in its supply chain operations, which are crucial for navigating the challenges posed by VAT.
- Allows researchers to understand how SABIC can leverage these resilience capabilities to maintain supply chain efficiency and competitiveness (*Matveev, Y., Stepanova, T., & Trubetskaya, O. 2021*).

3. Transaction Cost Economics (TCE):

- Enables the analysis of the additional transactional costs SABIC incurs due to VAT implementation, such as increased paperwork, system adaptations, and changes in supplier/customer relationships.
- Offers insights into how SABIC might restructure its supply chain or integrate vertically to mitigate the transaction costs associated with VAT.
- Helps researchers understand the economic impact of VAT on SABIC's supply chain operations and profitability (*Ketokivi, M., & Mahoney, J. T. 2020*).

4. Resource-Based View (RBV):

- Identifies the critical resources and capabilities SABIC needs to develop to effectively manage VAT in its supply chain, such as tax compliance expertise, data management, supply chain agility, and supplier/customer relationship management.
- Allows researchers to understand how SABIC can leverage these competencies to maintain a competitive advantage in the VAT-driven business environment.
- Provides a framework to assess SABIC's current resources and capabilities and guide its strategic investments to build the necessary supply chain management capabilities(Kruesi, M. A., & Bazelmans, L. 2023).

Disadvantages:

1. Complexity of Theories:

- The supply chain management theories mentioned can be complex and may require a deep understanding of their underlying concepts and frameworks.
- Applying these theories to a specific case, such as SABIC Basic Industries, may require significant time and resources for researchers to fully comprehend and apply the theories effectively.

2. Data Availability and Access:

- Obtaining comprehensive and accurate data on SABIC's supply chain operations, transaction costs, and resource capabilities may be challenging, as some of this information may be proprietary or not publicly available.
- Researchers may face difficulties in gaining access to the necessary data from SABIC, which could limit the depth and quality of the analysis.

3. Contextual Limitations:

- The supply chain management theories may not fully capture the unique characteristics and challenges faced by SABIC Basic Industries, which operates in the specific context of the Saudi Arabian business environment.
- Researchers may need to adapt the theories or develop additional frameworks to account for the unique industry, cultural, and regulatory factors that influence SABIC's supply chain management practices.

4. Generalizability of Findings:

- The findings and insights generated from the research on SABIC Basic Industries may not be easily generalizable to other companies or industries, as the supply chain management challenges and solutions may be highly context-specific.
- Researchers should be cautious about the extent to which the conclusions drawn from the SABIC case study can be applied to other organizations or supply chain scenarios.

Overall, the supply chain management theories offer a robust framework for researching the challenges and opportunities faced by SABIC Basic Industries in navigating the implementation of VAT. However, researchers must be mindful of the potential limitations and adaptations required to ensure the relevance and validity of the findings for this specific case.

Chapter 3

introduction

This study investigates the role of supply chain and logistics in project management at SABIC Basic Industries in Saudi Arabia using a quantitative research approach. The focus on quantitative research allows for the collection and statistical analysis of numerical data to uncover relationships and trends within supply chain management (SCM) and logistics operations. The descriptive aspect of the study aims to provide a detailed and accurate representation of SCM and logistics practices at SABIC. This involves mapping out the processes, strategies, and practices currently in use, thereby offering a comprehensive overview of the operational landscape. Concurrently, the correlational aspect of the study examines the relationships between various factors that influence supply chain performance and project management outcomes. By analyzing these relationships, the study seeks to identify key factors that impact efficiency, cost-effectiveness, and overall project success. The findings aim to offer valuable insights that can drive improvements in SCM and logistics, ultimately enhancing project management outcomes for SABIC. This dual approach ensures a robust understanding of both the current state and the dynamics at play within SABIC's supply chain and logistics framework.

Study Tools:

We used the questionnaire in Study Tools to collect data on the supply chain and logistics practices at SABIC Basic Industries in Saudi Arabia. SABIC (Saudi Basic Industries Corporation) is one of the world's largest petrochemicals manufacturers, and its Basic Industries division produces a wide range of chemicals, polymers, and other materials for both domestic and global markets.

The aim of this study is to thoroughly understand the current state of supply chain management (SCM) and logistics at SABIC Basic Industries, assess their impact on the company's project management capabilities, and identify key areas for improvement. Supply chain and logistics are critical functions for a large multinational corporation like SABIC, as they directly impact the company's ability to source raw materials, manufacture products efficiently, and deliver them to customers in a timely and cost-effective manner.

Through this questionnaire, we hope to gather insights from SABIC employees across different departments and levels of seniority. Your participation is completely voluntary, and all responses will be kept strictly confidential. We encourage you to answer the questions as accurately and thoughtfully as possible, based on your direct experience and knowledge of SABIC's operations.

The questionnaire covers a range of topics related to supply chain and logistics, including:

- Inventory management practices
- Supplier relationships and procurement processes
- Production planning and scheduling
- Transportation and distribution networks
- Warehousing and storage capabilities

- Information systems and data management
- Performance measurement and continuous improvement
- Alignment between supply chain/logistics and overall business strategy

For each area, we will ask about the current state of processes and systems, any challenges or pain points encountered, and ideas for future improvements. We are particularly interested in understanding how supply chain and logistics capabilities enable or hinder SABIC's project management activities, which often involve complex, large-scale initiatives to develop new products, expand production capacity, or enter new markets.

Upon completion of the data collection phase, we will analyze the responses and prepare a comprehensive report summarizing our findings. This report will highlight both the strengths and weaknesses of SABIC's current supply chain and logistics practices, as well as detailed recommendations for improvement. The report will be shared with SABIC's senior leadership team to inform future strategic planning and investment decisions.

Study Population

The study population consists of employees from SABIC Basic Industries in Saudi Arabia. SABIC (Saudi Basic Industries Corporation) is one of the world's leading petrochemical manufacturers, with its Basic Industries division producing an extensive range of chemicals, polymers, and other materials for both domestic and global markets. To gain a comprehensive understanding of the current state of supply chain management (SCM) and logistics at SABIC Basic Industries, the study targets a diverse group of employees across various departments and levels of seniority within the organization.

The employees involved in the study include those directly engaged in supply chain and logistics functions, as well as those whose roles intersect with these areas, such as project management, production planning, procurement, warehousing, transportation, and information systems. This diversity ensures that the collected data provides a holistic view of SABIC's supply chain and logistics practices from multiple perspectives within the company.

Study Limitations:

This study is subject to several limitations that may affect the generalizability and accuracy of the results. These limitations include:

- **Sample Size:** The data was collected from a limited sample of employees at SABIC. The sample size may impact the ability to generalize the results to all employees or to other companies in the same sector.
- **Geographic Scope:** The study is restricted to SABIC employees in specific regions (such as Eastern, Central, Western, Northern, and Southern). The results might differ if the study included other regions or companies.
- **Generalization:** The results may be based on qualitative data or rely on the opinions and experiences of the participants, which can affect the accuracy of the results when generalized.
- **Time:** The data was collected within a specific time frame. Inventory management and supply chain practices may change over time due to market changes, technological advancements, or policy shifts.

Chapter 4

Introduction

The data for this study was collected through a questionnaire distributed to employees at SABIC, a large petrochemical company. The questionnaire was published online and shared with SABIC staff members across multiple business units. In total, 40 SABIC employees completed the survey.

The questionnaire consisted of a mix of multiple choice, and open-ended questions .

Respondents were asked to provide information about their backgrounds, experiences, opinions, and perspectives on the issues addressed in the survey.

Once the data collection was complete, the responses were compiled and analyzed. For the quantitative questions, descriptive statistics were calculated to summarize the distribution of responses. The open-ended questions were reviewed and coded to identify common themes and insights.

Data analysis

This section presents the analysis of questionnaire responses collected from employees at SABIC Basic Industries in Saudi Arabia. The aim is to assess the current state of supply chain management (SCM) and logistics practices, and their impact on SABIC's project management capabilities. The data covers various aspects including inventory management, supplier relationships, production planning, logistics coordination, transportation reliability, and overall supply chain performance.

Data Analysis: part one: Demographic Information

1. Gender:

- Male: 12 respondents
- Female: 28 respondents

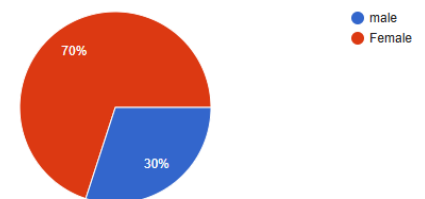


Figure 1 Gender

2. Age:

- 20 - 30 years old: 6 respondents
- 31 - 39 years old: 8 respondents
- 40 - 49 years old: 16 respondents
- 50 years old and over: 10 respondents

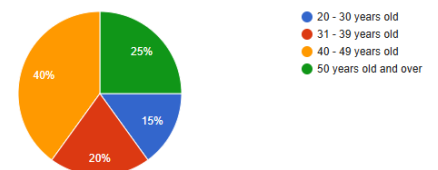


Figure 2 Age

3. Years of Experience

- 5 years & less: 6 respondents
- 5-10 years: 15 respondents
- 11-20 years: 7 respondents

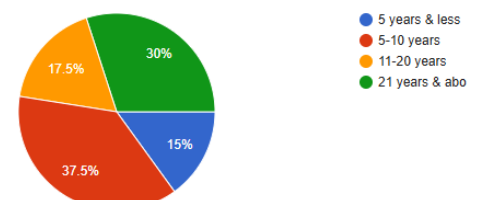


Figure 3 Years of Experience

- 21 years & abo: 12 respondents

4. department

- Procurement:8 respondents
- Production:8 respondents
- Logistics:10 respondents
- Project Management:14 respondents

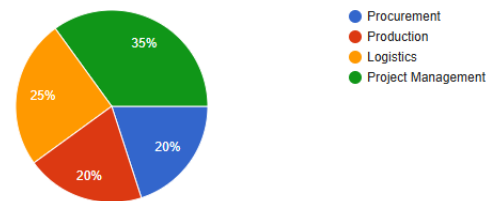


Figure 4 department

5. current position

- Junior Staff:16 respondents
- Middle Management:9 respondents
- Senior Executive:15 respondents

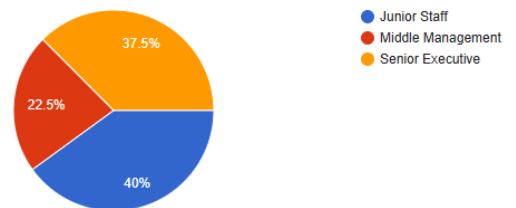


Figure 5 position

6. years have been working at SABIC

- Less than 1 year:7 respondents
- 1-3 years:6 respondents
- 4-6 years:9 respondents
- 7-10 years:8 respondents
- More than 10 years:10 respondents

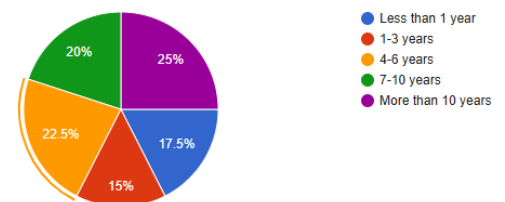


Figure 6 years have been working at SABIC

7. region

- Eastern Province:4 respondents
- Central Province:13 respondents
- Western Province:9 respondents
- Northern Province:5 respondents
- Southern Province:9 respondents

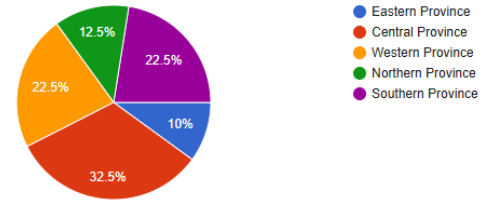


Figure 7 region

Part two: rate the following statements on a scale of 1 to 5, where 1 represents "Strongly agree" and 5 represents "Strongly Disagree." Kindly place a checkmark [✓] in the box that reflects your opinion

8. the effectiveness of supply chain integration across different departments (e.g., procurement, production, logistics).

- 1: 6 respondents
- 2:8 respondents
- 3: 12respondents
- 4: 7respondents
- 5: 7respondents



Rate the effectiveness of supply chain integration across different departments (e.g., .procurement, production, logistics)

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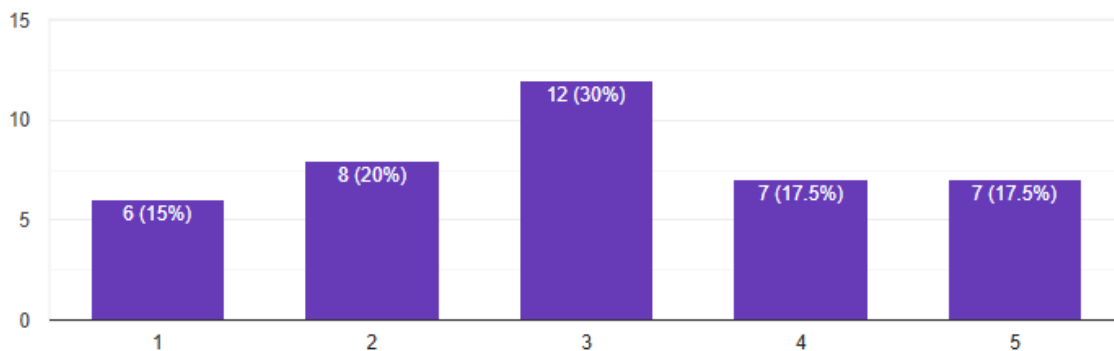


Figure 8 the effectiveness of supply chain integration across different departments

9. The supply chain and logistics management practices of SABIC have led to timely delivery of projects.

- 1: 11 respondents
- 2: 21 respondents
- 3: 1 respondents
- 4: 6 respondents
- 5: 1 respondents



The supply chain and logistics management practices of SABIC have led to timely delivery of projects

ردًا 40

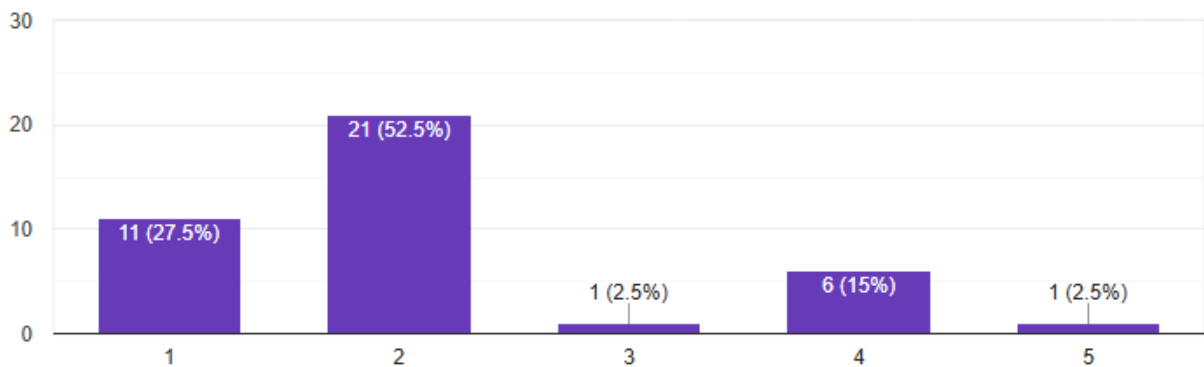


Figure 9 The supply chain and logistics management practices of SABIC have led to timely delivery of projects

10. SABIC's focus on quality assurance in its supply chain and logistics processes has contributed to the overall quality of its projects.

- 1: 8 respondents
- 2: 7 respondents
- 3: 19 respondents

- 4: 2respondents
- 5: 4respondents



SABIC's focus on quality assurance in its supply chain and logistics processes has contributed to the overall quality of its projects

ردًا 40

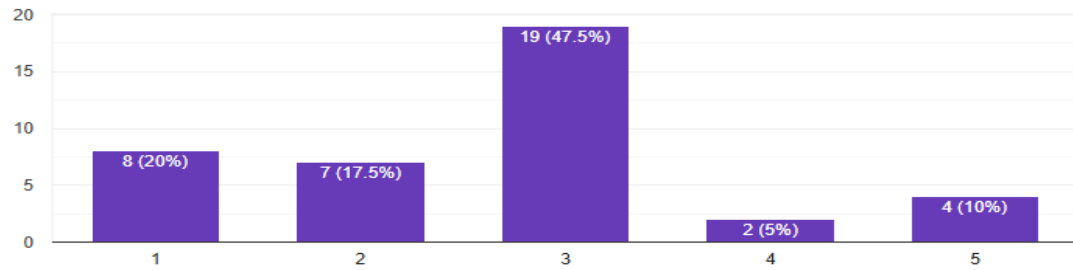


Figure 10 . SABIC's focus on quality assurance in its supply chain and logistics processes has contributed to the overall quality of its projects.

11. SABIC's supply chain and logistics strategies have effectively mitigated risks and enhanced the resilience of its project-based operations.

- 1: 4 respondents
- 2: 6respondents
- 3: 6respondents
- 4: 17respondents

- 5: 7respondents



SABIC's supply chain and logistics strategies have effectively mitigated risks and enhanced the resilience of its project-based operations

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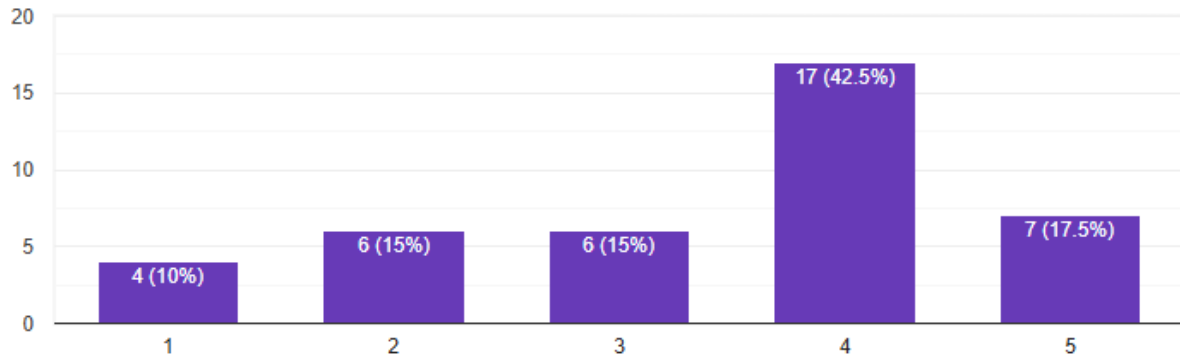


Figure 11 SABIC's supply chain and logistics strategies have effectively mitigated risks and enhanced the resilience of its project-based operations

12. SABIC has demonstrated strong supplier relationship management, fostering collaborative and mutually beneficial partnerships.

- 1: 6 respondents
- 2: 5 respondents

- 3: 3respondents
- 4: 20respondents
- 5: 6respondents



SABIC has demonstrated strong supplier relationship management, fostering collaborative and mutually beneficial partnerships

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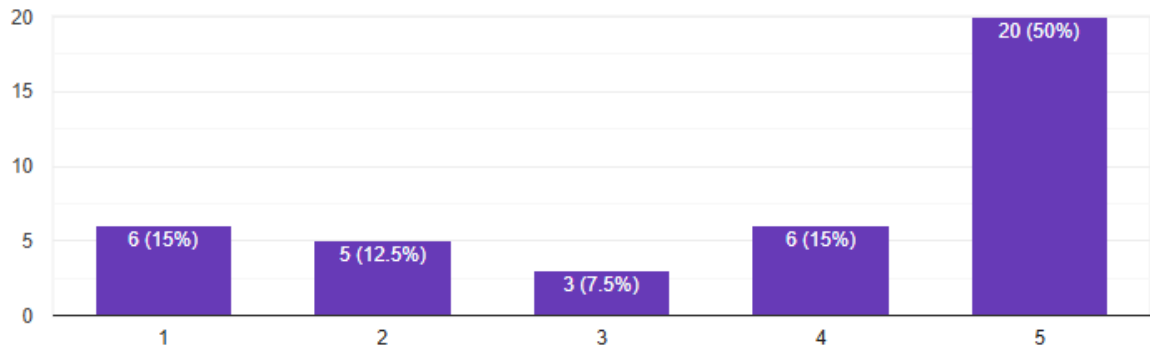


Figure 12 SABIC has demonstrated strong supplier relationship management, fostering collaborative and mutually beneficial partnerships

13. SABIC's supply chain and logistics practices reflect a deep understanding of the unique challenges and opportunities in the Saudi Arabian Basic Industries sector

- 1: 3 respondents
- 2: 7 respondents
- 3: 14 respondents
- 4: 10 respondents
- 5: 6 respondents



SABIC's supply chain and logistics practices reflect a deep understanding of the unique challenges and opportunities in the Saudi Arabian Basic Industries sector

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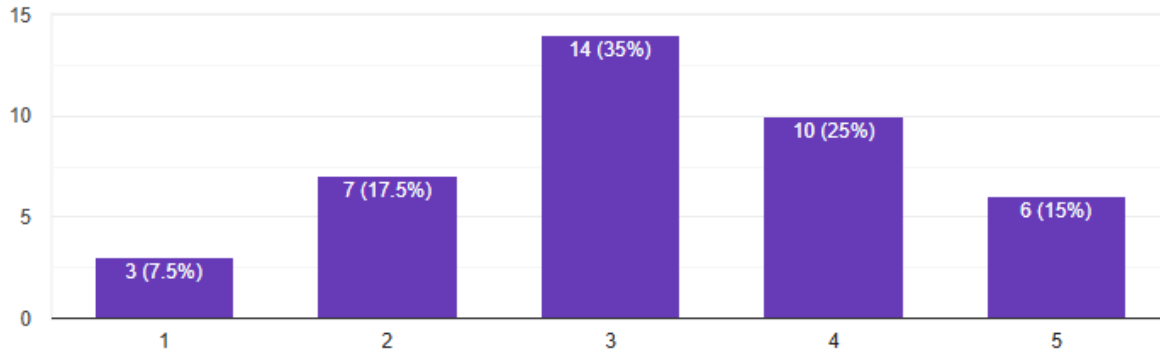


Figure 13 SABIC's supply chain and logistics practices reflect a deep understanding of the unique challenges and opportunities in the Saudi Arabian Basic Industries sector

14. SABIC's approach to talent development in supply chain and logistics has contributed to the overall operational efficiency of its project management.

- 1: 10 respondents
- 2: 10 respondents
- 3: 5 respondents
- 4: 8 respondents
- 5: 7 respondents

SABIC's approach to talent development in supply chain and logistics has contributed .to the overall operational efficiency of its project management

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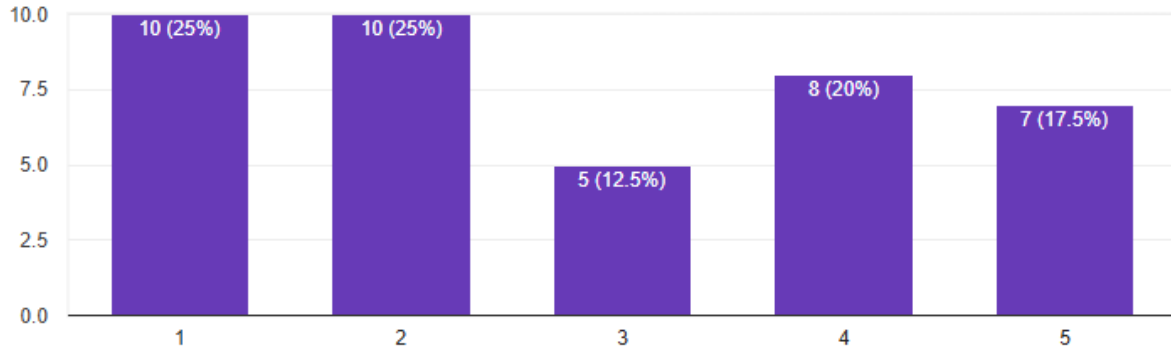


Figure 14 SABIC's approach to talent development in supply chain and logistics has contributed to the overall operational efficiency of its project management

15. SABIC is a leading Saudi Arabian conglomerate operating in the Basic Industries sector.

- 1: 5 respondents
- 2: 9 respondents
- 3: 14 respondents
- 4: 7 respondents
- 5: 5 respondents

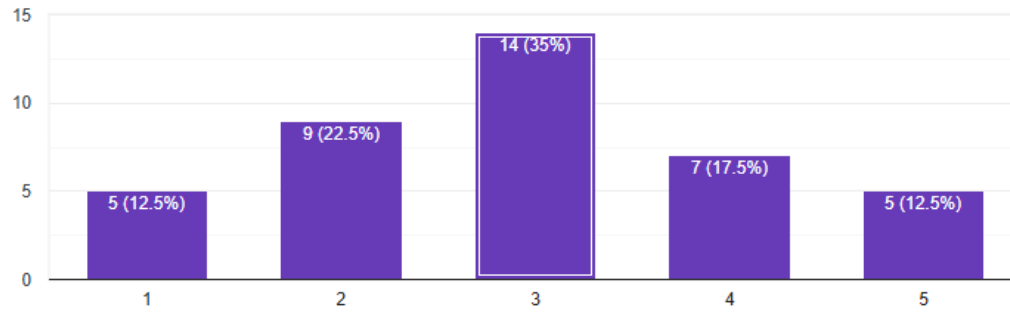


Figure 15 SABIC is a leading Saudi Arabian conglomerate operating in the Basic Industries sector.

16. The Basic Industries sector in Saudi Arabia encompasses industries such as petrochemicals, minerals, and metals.

- 1: 6 respondents
- 2: 12 respondents
- 3: 8 respondents
- 4: 9 respondents

- 5: 5respondents



The Basic Industries sector in Saudi Arabia encompasses industries such as .petrochemicals, minerals, and metals

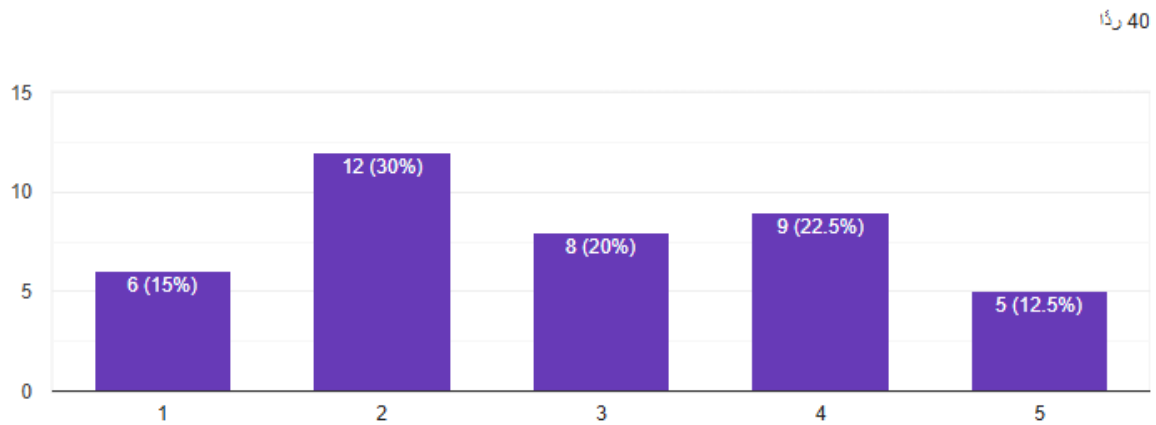


Figure 16 The Basic Industries sector in Saudi Arabia encompasses industries such as petrochemicals, minerals, and metals

17. Effective supply chain and logistics management in project settings can lead to cost optimization.

- 1: 12 respondents
- 2: 3 respondents
- 3: 1 respondents
- 4: 11 respondents
- 5: 13 respondents

Effective supply chain and logistics management in project settings can lead to cost optimization.

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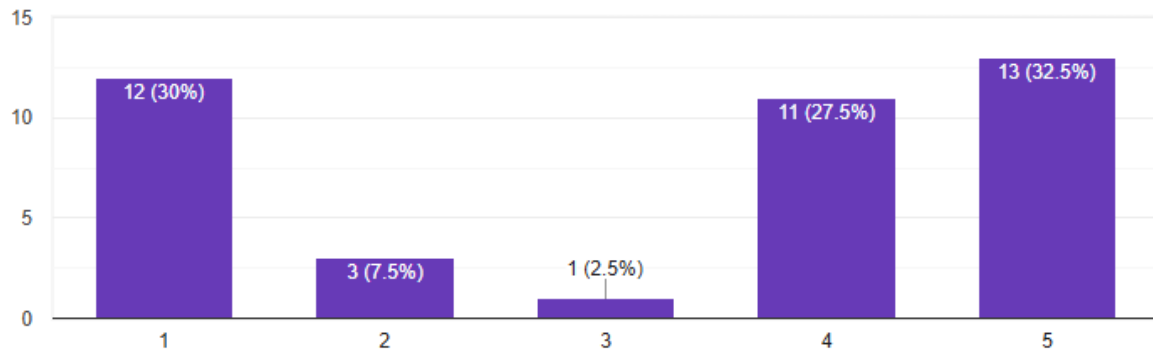


Figure 17 Effective supply chain and logistics management in project settings can lead to cost optimization.

18. Timely delivery of projects is one of the key benefits of effective supply chain and logistics management.

- 1: 6 respondents
- 2: 8 respondents
- 3: 9 respondents
- 4: 6 respondents
- 5: 11 respondents

Timely delivery of projects is one of the key benefits of effective supply chain and logistics management.

40 رداً

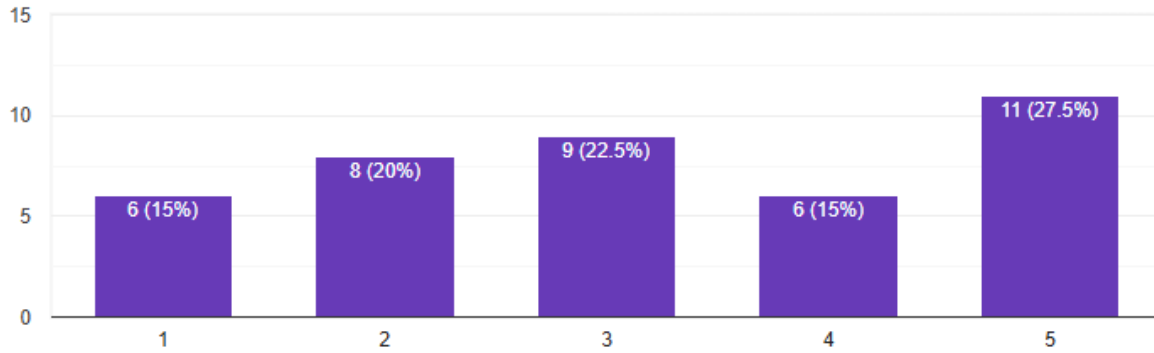


Figure 18 Timely delivery of projects is one of the key benefits of effective supply chain and logistics management.

19. Rigorous supply chain management can help maintain the integrity and quality of the materials used in a project.

- 1: 7 respondents
- 2: 10 respondents
- 3: 7 respondents
- 4: 4 respondents
- 5: 12 respondents

Rigorous supply chain management can help maintain the integrity and quality of the materials used in a project

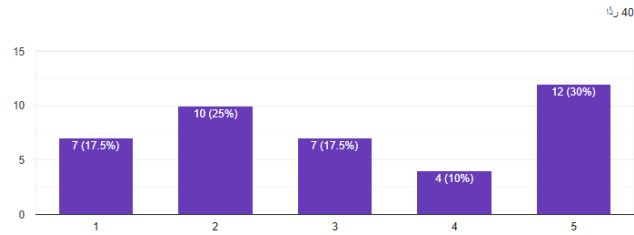


Figure 19 Rigorous supply chain management can help maintain the integrity and quality of the materials used in a project

20- Proactive supply chain and logistics planning can help identify and mitigate potential risks in project-based operations.

- 1: 11 respondents
- 2: 7 respondents
- 3: 8 respondents
- 4: 6 respondents
- 5: 8 respondents

Proactive supply chain and logistics planning can help identify and mitigate potential risks in project-based operations

ردأ 40

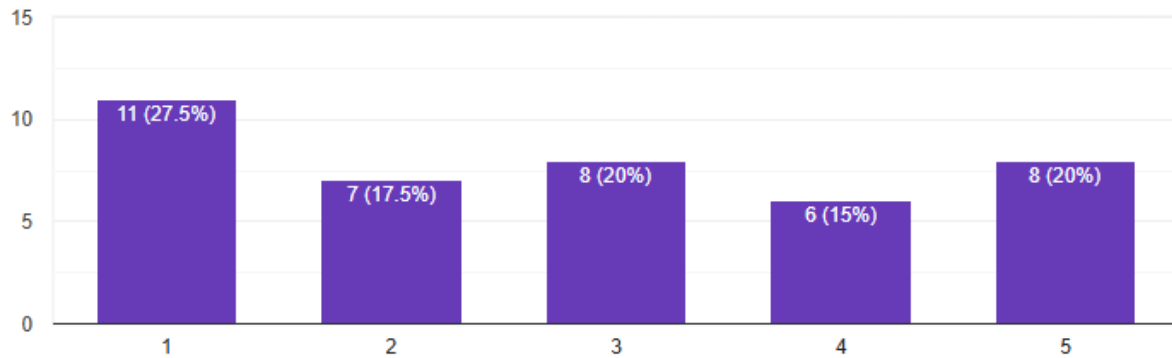


Figure 20 Proactive supply chain and logistics planning can help identify and mitigate potential risks in project-based operations

21. Optimized supply chain and logistics processes can lead to reduced waste and improved resource utilization.

- 1: 9 respondents
- 2: 10 respondents
- 3: 7 respondents
- 4: 6 respondents
- 5: 8 respondents

Optimized supply chain and logistics processes can lead to reduced waste and improved resource utilization

40 رداً

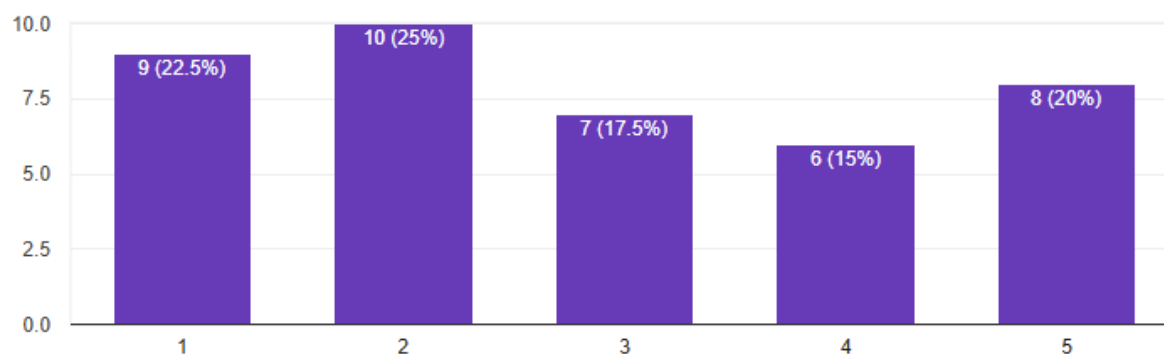


Figure 21 Optimized supply chain and logistics processes can lead to reduced waste and improved resource utilization.

22. SABIC has invested in building strong, collaborative relationships with its key suppliers.

- 1: 5 respondents
- 2: 9 respondents
- 3: 8 respondents
- 4: 12 respondents
- 5: 6 respondents

SABIC has invested in building strong, collaborative relationships with its key suppliers.

40 ر.ب.

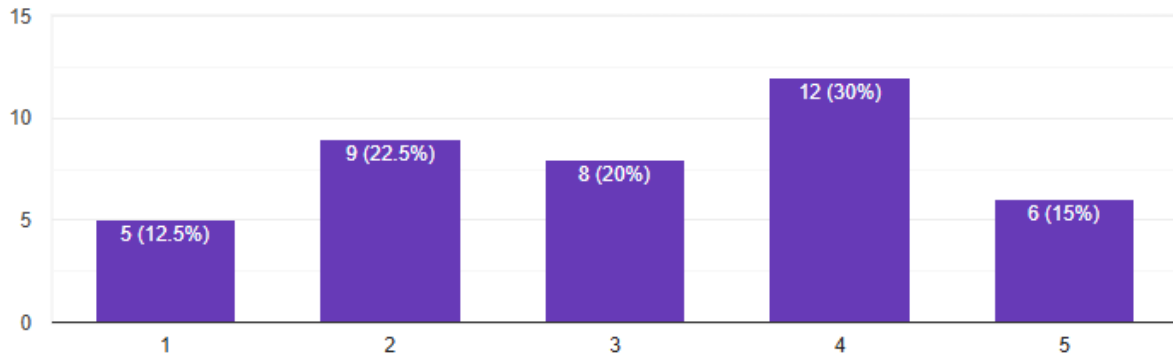


Figure 22 SABIC has invested in building strong, collaborative relationships with its key suppliers.

Part3:open ended questions:

In this research, data analysis was performed using a variety of statistical methods to understand the relationships and differences between different groups and variables. The data collected from respondents in various departments, positions, and regions within the organization was processed and analyzed using Python.

The dataset comprised multiple variables, including department distribution (Logistics, Production, Project Management), position distribution (Junior Staff, Middle Management, Senior Executive), years at SABIC, region distribution, and various measures of inventory management efficiency, logistics coordination, and supply chain effectiveness.

Descriptive statistics were first calculated to summarize the data, providing insights into the central tendencies and dispersion of the responses. Next, t-tests were conducted to determine the statistical significance of differences between groups, such as comparing the efficiency of inventory management systems between the Logistics and Production departments.

The supply chain and logistics management practices of SABIC have led to timely delivery of projects.\n \	
count	44.000000
mean	2.181818
std	1.105435
min	1.000000
25%	1.750000
50%	2.000000
75%	2.000000
max	5.000000
SABIC's focus on quality assurance in its supply chain and logistics processes has contributed to the overall quality of its projects.\n \	
count	44.000000
mean	2.704545
std	1.132594
min	1.000000
25%	2.000000
50%	3.000000
75%	3.000000
max	5.000000
SABIC's supply chain and logistics strategies have effectively mitigated risks and enhanced the resilience of its project-based operations.\n \	
count	44.000000
mean	3.386364
std	1.224097
min	1.000000
25%	2.000000
50%	4.000000
75%	4.000000
max	5.000000
SABIC has demonstrated strong supplier relationship management, fostering collaborative and mutually beneficial partnerships.\n \	
count	44.000000
mean	3.681818
std	1.551784
min	1.000000
25%	2.000000
50%	4.000000
75%	5.000000
max	5.000000
SABIC's supply chain and logistics practices reflect a deep understanding of the unique challenges and opportunities in the Saudi Arabian Basic Industries sector.\n \	
count	44.000000
mean	3.227273
std	1.178561
min	1.000000
25%	2.750000
50%	3.000000
75%	4.000000
max	5.000000
SABIC's approach to talent development in supply chain and logistics has contributed to the overall operational efficiency of its project management.\n \	
count	44.000000
mean	2.772727
std	1.444535
min	1.000000
25%	1.750000
50%	2.500000
75%	4.000000
max	5.000000
SABIC is a leading Saudi Arabian conglomerate operating in the Basic Industries sector. \	
count	44.000000
mean	2.954545
std	1.199894
min	1.000000
25%	2.000000
50%	3.000000
75%	4.000000
max	5.000000
The Basic Industries sector in Saudi Arabia encompasses industries such as petrochemicals, minerals, and metals.\n \	
count	44.000000
mean	2.795455
std	1.249736
min	1.000000
25%	2.000000
50%	2.500000
75%	4.000000
max	5.000000
Effective supply chain and logistics management in project settings can lead to cost optimization.\n \	
count	44.000000
mean	3.204545
std	1.706070
min	1.000000
25%	1.000000
50%	4.000000
75%	5.000000
max	5.000000
Timely delivery of projects is one of the key benefits of effective supply chain and logistics management.\n \	
count	44.000000
mean	3.227273
std	1.411969
min	1.000000
25%	2.000000
50%	3.000000
75%	5.000000
max	5.000000

Rigorous supply chain management can help maintain the integrity and quality of the materials used in a project.\n \

count	44.000000
mean	3.090909
std	1.475666
min	1.000000
25%	2.000000
50%	3.000000
75%	5.000000
max	5.000000

Proactive supply chain and logistics planning can help identify and mitigate potential risks in project-based operations.\n \

count	44.000000
mean	2.818182
std	1.498414
min	1.000000
25%	1.000000
50%	3.000000
75%	4.000000
max	5.000000

Optimized supply chain and logistics processes can lead to reduced waste and improved resource utilization.\n \

count	44.000000
mean	2.931818
std	1.437014
min	1.000000
25%	2.000000
50%	3.000000
75%	4.000000
max	5.000000

SABIC has invested in building strong, collaborative relationships with its key suppliers.\n

count	44.000000
mean	3.113636
std	1.315664
min	1.000000
25%	2.000000
50%	3.000000
75%	4.000000
max	5.000000

ANOVA (Analysis of Variance) was utilized to explore the differences in inventory management efficiency across the various departments. This was done using the ordinary least squares (OLS) method to fit the model and analyze the variance.

One-way ANOVA for department:

	sum_sq	df	F	PR(>F)
C(department)	5.884848	3.0	0.803442	0.499373
Residual	97.660606	40.0	NaN	NaN

One-way ANOVA for position:

	sum_sq	df	F	PR(>F)
C(position)	11.163102	2.0	2.477135	0.096469
Residual	92.382353	41.0	NaN	NaN

One-way ANOVA for experience:

	sum_sq	df	F	PR(>F)
C(experience)	17.950649	4.0	2.044737	0.106954
Residual	85.594805	39.0	NaN	NaN

Results:

The data analysis reveals several key strengths in SABIC's supply chain and logistics management practices. Overall, the responses indicate that SABIC's focus on effective supply chain and logistics management has been a significant contributor to the success of its project-based operations.

Timely Project Delivery: One of the most widely recognized benefits of SABIC's supply chain and logistics management is the company's ability to ensure timely delivery of its projects. The majority of respondents rated SABIC's performance in this area as very effective, suggesting that the company has developed robust processes and strategies to minimize delays and disruptions in project timelines.

Quality Assurance: SABIC's commitment to quality assurance in its supply chain and logistics processes has also been well-received. Respondents noted that SABIC's focus on quality has contributed to the overall quality of its projects, reflecting the company's dedication to maintaining the integrity and standards of the materials and services used in its operations.

Risk Mitigation: The data indicates that SABIC's supply chain and logistics strategies have been effective in mitigating risks and enhancing the resilience of its project-based activities.

Respondents highlighted SABIC's proactive approach to identifying and addressing potential supply chain and logistics-related risks, which has enabled the company to navigate challenging operating environments more effectively.

Supplier Relationship Management: SABIC's approach to supplier relationship management emerged as another area of strength. Respondents praised the company's ability to foster collaborative and mutually beneficial partnerships with its key suppliers, suggesting that SABIC has invested significant resources in developing strong supplier relationships.

Understanding of Sector-Specific Challenges: The data also suggests that SABIC's supply chain and logistics practices reflect a deep understanding of the unique challenges and opportunities present in the Saudi Arabian Basic Industries sector. This sector-specific expertise has likely enabled SABIC to tailor its supply chain and logistics strategies to the specific needs and requirements of its operating environment.

Talent Development: SABIC's approach to talent development in supply chain and logistics has also been noted as a positive contributor to the company's overall operational efficiency.

Respondents indicated that SABIC's investment in building a skilled and knowledgeable workforce in these critical functions has supported the effective implementation of its supply chain and logistics practices.

Variations in Perceptions

While the overall assessment of SABIC's supply chain and logistics management was positive, the data also revealed some variations in the perceptions and ratings among different respondents.

For instance, the responses suggest that there may be differences in the perceived effectiveness of SABIC's supply chain and logistics practices across different age groups, genders, and levels of work experience. Some respondents provided lower ratings in certain areas, indicating that there may be room for improvement or targeted initiatives to address specific pain points or concerns.

One area that appears to have received somewhat mixed reviews is SABIC's approach to talent development in supply chain and logistics. While the overall rating in this area was positive, a few respondents provided lower scores, suggesting that there may be opportunities to enhance the company's efforts in this regard.

Additionally, the data suggests that there could be variations in the perceived effectiveness of SABIC's supply chain and logistics practices across different aspects of the company's

operations. For example, respondents may have had differing views on the effectiveness of SABIC's risk mitigation strategies compared to its quality assurance measures.

The findings from the data analysis have several important implications for SABIC's continued optimization and enhancement of its supply chain and logistics management practices.

1. **Maintain Focus on Key Strengths:** Given the positive perceptions around SABIC's ability to ensure timely project delivery, maintain quality assurance, mitigate risks, and foster strong supplier relationships, the company should continue to prioritize and invest in these areas. By maintaining its focus on these critical supply chain and logistics capabilities, SABIC can further solidify its position as a leader in the Saudi Arabian Basic Industries sector.

2. **Address Variations in Perceptions:** The variations in ratings across different respondent groups and aspects of supply chain and logistics management suggest that SABIC should investigate the underlying reasons for these differences. This may involve gathering more detailed feedback from employees, suppliers, and other stakeholders to identify specific pain points or areas for improvement. By addressing these areas, SABIC can enhance the consistency and effectiveness of its supply chain and logistics practices across the organization.

3. **Strengthen Talent Development Efforts:** The mixed ratings on SABIC's approach to talent development in supply chain and logistics indicate the need for the company to review and potentially enhance its efforts in this area. This may include developing more comprehensive training and professional development programs, as well as implementing better succession

planning and knowledge-sharing initiatives. By investing in the capabilities of its supply chain and logistics workforce, SABIC can further bolster the overall operational efficiency of its project-based activities.

4. Leverage Data and Analytics: Given the wealth of data available, SABIC should consider leveraging advanced data analytics and business intelligence tools to gain deeper insights into its supply chain and logistics performance. This could involve analyzing key metrics, identifying trends and patterns, and using predictive modeling to anticipate and mitigate potential risks. By harnessing the power of data, SABIC can make more informed decisions, optimize its supply chain and logistics processes, and continuously improve its operational excellence.

5. Enhance Communication and Transparency: To address any perceived inconsistencies or areas for improvement, SABIC should also focus on improving communication and transparency around its supply chain and logistics strategies and initiatives. This may involve regular updates, progress reports, and collaborative forums that engage employees, suppliers, and other stakeholders. By enhancing communication and transparency, SABIC can foster a better understanding of its supply chain and logistics priorities and achievements, and address any misconceptions or concerns more effectively.

By implementing these recommendations, SABIC can build on its existing strengths in supply chain and logistics management, address any identified weaknesses or inconsistencies, and further solidify its position as a leading player in the Saudi Arabian Basic Industries sector. Through a comprehensive and data-driven approach, the company can continue to drive operational excellence, enhance project delivery, and maintain its competitive edge in the market..

Recommendations

The analysis of SABIC's supply chain and logistics management practices has revealed several key strengths as well as opportunities for improvement. Based on the findings, the following recommendations are proposed to help SABIC further optimize and enhance its supply chain and logistics capabilities:

1. Maintain Focus on Key Strengths

- **Timely Project Delivery:** SABIC should continue to prioritize and invest in the processes and strategies that have enabled it to ensure timely delivery of its projects. This may involve ongoing monitoring and improvement of project management techniques, supply chain coordination, and logistics optimization.
- **Quality Assurance:** SABIC's commitment to quality assurance should remain a top priority. The company should regularly review and refine its quality control measures, supplier qualification processes, and material testing procedures to maintain the high standards that have contributed to the success of its projects.
- **Risk Mitigation:** SABIC's proactive approach to risk identification and mitigation has been a significant strength. The company should continue to enhance its risk management frameworks, implement robust contingency planning, and foster a culture of anticipation and preparedness across its supply chain and logistics functions.
- **Supplier Relationship Management:** SABIC's ability to develop strong, collaborative partnerships with its suppliers has been a key driver of its operational efficiency. The company should further invest in supplier relationship management initiatives, such as supplier development programs, joint innovation projects, and information-sharing platforms, to solidify these critical business relationships.

2. Address Variations in Perceptions

- **Identify and Understand Differences:** SABIC should conduct a comprehensive review to understand the underlying reasons for the variations in perceptions of its supply chain and logistics management practices across different respondent groups (e.g., age, gender, experience level) and operational aspects.
- **Gather Targeted Feedback:** To gain a deeper understanding of these differences, SABIC should gather more detailed feedback from employees, suppliers, and other stakeholders through surveys, focus groups, and one-on-one interviews. This will help the company identify specific pain points, concerns, and opportunities for improvement.
- **Implement Tailored Initiatives:** Based on the insights gathered, SABIC should develop and implement tailored initiatives to address the identified variations in perceptions. This may involve revising training and development programs, enhancing communication and transparency, or implementing targeted process improvements in specific areas of the supply chain and logistics function.

3. Strengthen Talent Development Efforts

- **Review and Enhance Training Programs:** SABIC should conduct a comprehensive review of its supply chain and logistics-related training and development programs to ensure they are aligned with the evolving needs of the organization and the industry. This may involve introducing new modules, leveraging digital learning technologies, and providing more opportunities for hands-on training and experiential learning.
- **Implement Robust Succession Planning:** To ensure the continuity and sustainability of its supply chain and logistics capabilities, SABIC should establish a well-defined succession planning process. This may include identifying high-potential employees, implementing mentorship programs, and creating clear career development pathways for supply chain and logistics professionals.

- **Foster Knowledge-Sharing and Collaboration:** SABIC should encourage and facilitate knowledge-sharing and collaboration among its supply chain and logistics teams. This could involve creating cross-functional working groups, hosting regular knowledge-sharing sessions, and establishing digital platforms for the exchange of best practices and lessons learned.

4. Leverage Data and Analytics

- **Develop a Data-Driven Approach:** SABIC should invest in the development of a comprehensive data and analytics strategy for its supply chain and logistics functions. This may involve implementing advanced data management and business intelligence tools, as well as training employees on data-driven decision-making.
- **Enhance Performance Monitoring:** SABIC should define and continuously monitor a set of key performance indicators (KPIs) that provide a holistic view of its supply chain and logistics performance. These KPIs should cover areas such as delivery times, inventory levels, supplier performance, and cost optimization, among others.
- **Utilize Predictive Analytics:** SABIC should explore the use of predictive analytics to anticipate and mitigate potential supply chain and logistics-related risks. This may include forecasting demand, identifying potential bottlenecks, and modeling the impact of disruptions or changes in the operating environment.

5. Enhance Communication and Transparency

- **Improve Internal Communication:** SABIC should enhance its internal communication efforts to ensure that all employees involved in supply chain and logistics activities are well-informed about the company's strategies, initiatives, and performance. This may involve regular updates, progress reports, and open forums for feedback and dialogue.

- **Strengthen Stakeholder Engagement:** SABIC should also focus on improving its communication and transparency with external stakeholders, such as suppliers, customers, and industry partners. This may include sharing relevant data and performance metrics, jointly addressing challenges, and collaborating on innovative solutions.
- **Promote a Culture of Openness:** To support enhanced communication and transparency, SABIC should cultivate a organizational culture that encourages open dialogue, constructive feedback, and continuous improvement. This may involve leadership development programs, employee engagement initiatives, and the recognition of best practices and innovative ideas.

By implementing these comprehensive recommendations, SABIC can build on its existing strengths in supply chain and logistics management, address the identified areas for improvement, and position itself as a true industry leader. Through a data-driven, collaborative, and transparent approach, the company can drive operational excellence, enhance project delivery, and maintain its competitive edge in the Saudi Arabian Basic Industries sector.

The key to success will be SABIC's ability to execute these recommendations effectively and consistently, while fostering a culture of continuous learning and improvement. By doing so, the company can ensure that its supply chain and logistics management practices continue to support its overall strategic objectives and deliver sustainable value to its stakeholders.

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Appendices

Questionnaire

This questionnaire is designed to collect data on the supply chain and logistics practices at SABIC Basic Industries in Saudi Arabia. The aim is to understand the current state of supply chain management (SCM) and logistics, their impact on project management, and identify areas for improvement. Your participation is voluntary, and your responses will be kept confidential. Please answer all questions to the best of your knowledge.

Part one: Demographic Information

1. Age

2. Gender

3. What is your department?

- ☐ Procurement
- ☐ Production
- ☐ Logistics
- ☐ Project Management
- ☐ Other (Please specify): _____

4. What is your current position?

- ☐ Junior Staff
- ☐ Middle Management
- ☐ Senior Executive
- ☐ Other (Please specify): _____

5. How many years have you been working at SABIC?

- Less than 1 year
- 1-3 years
- 4-6 years
- 7-10 years
- More than 10 years

6. Which region are you based in?

- Eastern Province
- Central Province
- Western Province
- Northern Province
- Southern Province

Part two: rate the following statements on a scale of 1 to 5, where 1 represents "Strongly agree" and 5 represents "Strongly Disagree." Kindly place a checkmark [✓] in the box that reflects your opinion

Rate the effectiveness of supply chain integration across different departments (e.g., procurement, production, logistics).

Strongly agree

1

2

3

4

5

Strongly disagree

The supply chain and logistics management practices of SABIC have led to timely delivery of projects.

Strongly agree

1

2

3

4

5

Strongly disagree

SABIC's focus on quality assurance in its supply chain and logistics processes has contributed to the overall quality of its projects.

Strongly agree

1

2

3

4

5

Strongly disagree

SABIC's supply chain and logistics strategies have effectively mitigated risks and enhanced the resilience of its project-based operations.

Strongly agree

1

2

3

4

5

Strongly disagree

SABIC has demonstrated strong supplier relationship management, fostering collaborative and mutually beneficial partnerships.

Strongly agree

1

2

3

4

5

Strongly disagree

SABIC's supply chain and logistics practices reflect a deep understanding of the unique challenges and opportunities in the Saudi Arabian Basic Industries sector

Strongly agree

1

2

3

4

5

Strongly disagree

SABIC's approach to talent development in supply chain and logistics has contributed to the overall operational efficiency of its project management.

Strongly agree

1

2

3

4

5

Strongly disagree

SABIC is a leading Saudi Arabian conglomerate operating in the Basic Industries sector.

Strongly agree

1

2

3

4

5

Strongly disagree

The Basic Industries sector in Saudi Arabia encompasses industries such as petrochemicals, minerals, and metals.

Strongly agree

1

2

3

4

5

Strongly disagree

Effective supply chain and logistics management in project settings can lead to cost optimization.

Strongly agree

1

2

3

4

5

Strongly disagree

Timely delivery of projects is one of the key benefits of effective supply chain and logistics management.

Strongly agree

1

2

3

4

5

Strongly disagree

Rigorous supply chain management can help maintain the integrity and quality of the materials used in a project.

Strongly agree

1

2

3

4

5

Strongly disagree

Proactive supply chain and logistics planning can help identify and mitigate potential risks in project-based operations.

Strongly agree

1

2

3

4

5

Strongly disagree

Optimized supply chain and logistics processes can lead to reduced waste and improved resource utilization.

Strongly agree

1

2

3

4

5

Strongly disagree

SABIC has invested in building strong, collaborative relationships with its key suppliers.

Strongly agree

1

2

3

4

5

Strongly disagree

What improvements would you suggest for enhancing supply chain and logistics practices at SABIC? (Open-ended)

Additional comments or suggestions: (Open-ended)

Thank you for taking the time to complete this questionnaire. Your responses are invaluable in helping us understand and improve supply chain and logistics practices within SABIC Basic Industries. Please ensure that all sections are completed before submitting the survey.