European International University, EIU-Paris

Master Thesis

Title:

Improving Cross-Functional Process Efficiency in Industrial Organizations in Saudi Arabia: A Business Analysis of Accountability, Delays, and Communication Gaps

Submitted by:

Bushra Ameen Qasem Al-Qaisi

[EIU2022164]

In Partial Fulfillment of the Requirements for the Degree of

(MBA.) in Education *(Leadership)*

Supervisor:

[Hisham Safowat]

Date:

[Oct, 2025]

ACKNOWLEDGEMENT

It is my great pleasure to acknowledge my deep admiration to the European International University (EIU) that has offered me the chance and academic background to do this research as a student of the Master of Business Administration (Leadership) programme. I would like to express my greatest gratitude to my supervisor and lecturers along with their constant support, motivation, and positive critique when crafting my study.

The participants in the survey that participated in the study and generously gave their precious time and super important insights are given special thanks; without them this study would not have been accomplished.

I would also like to thank my family and friends that were very supportive to me at all times in this process and also gave me patience and emotional support to complete the work. I have trusted that I would do it and this has provided me with a lot of strength.

TABLE OF CONTENT

Topic: Improving Cross-Functional Process Efficiency in Industrial Organizations in Saudi Arabia: A Business Analysis of Accountability, Delays, and Communication Gaps

ABSTRACT

This study investigates the factors influencing cross-functional process efficiency within Saudi Arabia's industrial organizations, focusing on accountability, process delays, and communication gaps. Industrial firms are a key actor in the realization of the goals in Saudi Vision 2030 regarding economic diversification and competitiveness, but the lack of clear roles, workflow delays, and ineffective communication between departments remain a barrier to their performance. In the study, the quantitative cross-sectional design was utilized to gather data of 100 employees working in major sectors of industry using a structured Likert-scale questionnaire. The analysis involved descriptive statistics, reliability tests, Pearson correlation and multiple regression analysis using SPSS. The findings indicated that accountability is positively correlated with process efficiency ($r = .971$, $p < .01$), whereas, process delays ($r = -.886$, $p < .01$) and communication gaps ($r = -.931$, $p < .01$) have significant negative impacts on efficiency. Regression results verified that accountability is beneficial in improving cross-functional performance, while delays and communication gaps are key obstacles. The research highlights the necessity of ensuring that accountability structures are clear, communication lines are streamlined and delay management efficient to enhance the competitiveness of the industries. The results provide practical implications on managers and policymakers who want to streamline workflows and facilitate vision 2030, as well as establishing sustainable operational excellence in the industrial sector in Saudi Arabia.

INTRODUCTION

Introduction

Industrial organizations today have become complex and they are competitive based on efficiency, reliability and uniformity of quality of products and services offered to the market. As global demands, technological capabilities, and customer expectations intensify, businesses must streamline workflows across production, procurement, logistics, and quality control (Keelson et al., 2024; Smith, 2024). However, these processes are usually disrupted by the lack of accountability, delays within the processes, communication failures that result in increased costs, missed deadlines, and unhappy customers. The industrial sector is an important national sector of the Saudi Arabian economy, diversified income sources and as a global (manufacturing, petrochemical, mining, and engineering) centre through the Vision 2030 initiative (Abedalrhman & Alzaydi, 2024). Large-scale industrial projects demand strong cross-functional coordination to meet strict timelines and quality standards; however, challenges in process integration, role ownership, and hierarchical communication often hinder efficiency, resulting in financial losses and reputational risks. Accordingly, this chapter outlines the study's background, problem statement, objectives, research questions, and significance, forming the foundation for analyzing cross-functional efficiency in Saudi industrial organizations concerning accountability, delays, and communication issues.

Background of the Study

Globally, industrial organizations face increasing pressure to enhance efficiency, reduce costs, and deliver high-quality products more rapidly. The Fourth Industrial Revolution has introduced technologies such as artificial intelligence, robotics, and the Internet of Things (IoT), which simplify operations but simultaneously increase complexity and interdependence across departments. Weak coordination has become a critical source of competitive disadvantage, as it often leads to project delays, cost overruns, and reduced responsiveness (George, 2024; Uchenna et al., 2024).

Cross-functional inefficiencies are common nowadays with poor communication, unfocused accountability and silos cultures despite the world of technology. According to McKinsey (2023), the causes of 45 percent of project delays of large-scale manufacturing include misalignment between departments, including procurement, production, and other quality assurance departments. These inefficiencies break supply chains, missing time, and reduce

profitability, and highlights the strategic value of cross-functional integration in terms of agility and competitiveness of organisations.

The industrial sector is one of the primary sources of economic training in Saudi Arabia regarding Vision 2030, as such plans as NEOM and the National Industrial Development and Logistics Programme (NIDLP) demand simultaneous cooperation among engineering and operations functions and supply chains functions. However, structural and cultural barriers—such as hierarchical decision-making, dependence on foreign labor, and limited communication transparency—often impede efficiency (Insights, 2023; Alshakrit et al., 2019). Lack of communication, accountability, delays of any process reinforce each other in a cycle of inefficiency. These problems should be addressed to improve the industrial competitiveness of Saudi Arabia, attracting investment and making the Kingdom a credible global partner. This study fills in the research gap by analysing the role of accountability, delays, and communication in cross-functional efficiency of Saudi industrial organisations that can inform the achievement of Vision 2030.

Problem Statement

Cross-functional holds importance in striving to ensure cost effectiveness, speed, and quality. However, with the advancement of technology, inefficiencies still prevail because of low accountabilities, lack of proper communication, and delays in decision-making causing the project lateness and lack of competitiveness. Operation bottlenecks in the Saudi Arabian industry sector, which constitutes the core of Vision 2030 with the production of goods, petrochemicals, and infrastructure, are usually due to overlapping remit, lack of focus, and inflexible hierarchies (Guendouz et al., 2020; Memon et al., 2023). Such problems lead to disruptions in the supply chains, default of the contract, and damage to the reputation, whereas the discrepancy in the practises of accountability eradicates the future success of improvement (Jenkins, 2024).

Empirical studies in Saudi Arabia have usually looked at accountability, delays and communication gaps in isolation, missing their common part. In fact, studies indicate that the drivers of inefficiency include role ambiguity, communication, and governance issues (Ghaleb & Piaralal, 2025; Bageis, 2023). This study therefore focuses on these interrelated factors and makes diagnoses and proposes specific solutions to promote context-specific improvement of cross-functional efficiency for alignment with Vision 2030.

Research Objectives

- **RO1:** To examine the effect of accountability on cross-functional process efficiency in Saudi Arabian industrial organizations.
- **RO2:** To investigate how delays in processes influence cross-functional efficiency.
- **RO3:** To assess the relationship between communication gaps and cross-functional process efficiency.

Research Questions

- How does accountability influence cross-functional process efficiency in Saudi Arabian industrial organizations?
- How do delays influence cross-functional processes efficiency?
- How do communication gaps influence cross-functional process efficiency?

Research Hypotheses

- **H1:** Accountability positively associated with cross-functional process efficiency.
- **H2:** Process delays negatively associated with cross-functional process efficiency.
- **H3:** Communication gaps negatively associated with cross-functional process efficiency.

Significance of the Study

This research attempts to solve a major operational problem in Saudi Arabia's industry sector, where project work is a complicated, capital-intensive, and time-sensitive process. Even a small inefficiency in terms of accountability, communication, or execution can snowball into expensive delays, budget overruns, and eroded client confidence. These interdependent issues are studied to give an integrated perspective of bottlenecks that impact cross-function efficiency.

The results will assist managers to enhance accountability mechanisms, in order to clarify roles, enhance decision making, and minimise risks. Major projects such as petrochemical and heavy industries need straightforward communication, quantifiable measures and articulate protocol of escalation measures. Increased efficiency contributes to the Vision 2030, relying on the enhancement of competitiveness, investment, and economic diversification. The study

addresses a research gap handling the achievements of accountability, delays, and communication among Saudi industries through the development of research findings to build superior corporate governance, policy development, and deserve cross-functional capacities.

Definition of Key Terms

1. Cross-Functional Process Efficiency

Operational Excellence - Refers to the ability to produce results by coordinating tasks, information, and resources across multiple departments to accomplish common goals with minimal delays, errors, and waste. This study focuses on Saudi Arabian Industrial organizations where functions like engineering, procurement, production, logistic, and quality control need to work in tandem with each other.

2. Accountability

The responsibility of individuals or teams working in an organisation to assume accountability of certain tasks, decisions, or outcomes and to be accountable to the performance outcomes. In this case, accountability implies further roles, reporting, and assignment of deliverables in various functional areas to prevent uncertainty and time wastage.

3. Delays

Any postponement in carrying out a set of activities, providing a service or achieving a milestone of a project. Delays in this study are breakdowns in the workflow between cross-functional that are caused by the lack of clear responsibilities, poor coordination, resource shortages, or a resource bottleneck resource allocation process.

4. Communication Gaps

Breakdowns or deficiencies in the exchange of information between individuals, teams, or departments that lead to misunderstandings, incomplete data transfer, or missed deadlines. In this study, communication gaps include both technical issues (e.g., lack of integration between systems) and human factors (e.g., hierarchical barriers, siloed work culture) that hinder smooth cross-functional collaboration.

Chapter Summary

This chapter prepared the study presenting the context of global and Saudi industry, where accountability abacuses, delays and communication problems were identified. It specified the problem, importance, purpose, and conditions, formulated the thesis outline, and readied the literature review and concept map.

LITERATURE REVIEW

Introduction

Industry in Saudi Arabia is transforming as a part of Vision 2030 to focus on efficiency, innovation, and modernization of both the public and private sectors. Studies show reform pressures that transform governance, accountability, and interdepartmental flows to enhance process efficiency (Attas, 2025). The digital transformation has enhanced performance in mega-industrial projects as well. Technologies such as 4D/5D BIM, artificial intelligence, and cloud-based project management reduce error in the planning phase and accelerate the delivery process, which is aligned with the targets of Vision 2030 (Gohar, 2025). These trends demonstrate the realignment of structures and the use of new technologies that are revolutionizing cross-functional cooperation.

Cross-functionality is the ability to coordinate procurement, operations, engineering, quality and support functions (Mushi et al., 2024). However, disjointed communication, bureaucratic time fritters, and lack of clear responsibility tend to hamper integration particularly in the capital-intensive projects in Saudi Arabia as the capital. Research validates that accountability, delay buffers and effective communication systems improve agility and performance (Adegbola et al., 2024) which can be aligned with the ambitions of the industrial objectives of Vision 2030.

Cross Functional Process Efficiency

Cross-functional efficiency helps in aligning the skills and resources of different departments leading to the reduction of delays, redundancies, and costs and builds better quality and customer satisfaction (Attah et al., 2024). Clear communication and accountability avoiding misalignment leading to effective, smooth-workflows, innovation, adaptability and sustainable competitive advantage (Ewim et al., 2024).

Accountability

The accountability means that the accountable individual, and group hold accountability in terms of actions, making decisions, and the results (Lofgren, 2025). Effective frameworks that contain KPIs and feedback encourage trust, transparency and integrity (Stewart et al., 2021). Incorporating accountability enhances sustainability and efficiency as well as long-term competitiveness in organizations (Carter, 2024).

Delays

Organisational delays slow down workflow and organisational performance and may be caused by a lack of coordination, job ambiguity or interdepartmental malalignment. Indicatively, delayed procurement might lead to the stalemate of the production process and cause ripple implications on the projects. These inefficiencies influence the expense increase, decrease in competitiveness and relationships with clients (Sufyan & Kumar, 2025). These can be causes of poor communication, lack of resources and planning, which are enforced by conflicting interest of the stakeholders. Timelines are also contributed by external factors such as supply chain disruptions, regulations or economic changes as well. Good project management, digital collaboration, and realistic contingency planning can mitigate such risks (Saha et al., 2023; Tariq & Gardezi, 2022).

Communication Gaps

A lack of specificity in communication decreases cross-functional performance in cases where information is distributed impeccably or procrastinated, leading to deceased time and faulty choices (Meluso, 2020). They are related to poorly defined hierarchies, siloed systems, and culture (Bano et al., 2016). To deal with them, administrative communication, frequent updates, and coordinating tools are the answers to provide transparency and timely information exchange (Kamal et al., 2023).

Relationship Between Cross Functional Process Efficiency and Accountability

Cross-functional teams are becoming a fundamental part of optimization, accountability, and innovation processes, and they are also becoming more critical in integrating various departments to address intricate problems and enhance performance (Attah et al., 2024). They build lean processes that make the business become nimble and quicker by removing siloes and removing redundancy in decision making. Nonetheless, issues such as role ambiguity, competing interests and poor strategy remain potential risks (Attah et al., 2024). Dual reporting affects clarity and efficiency in management; it blurs the professional lines and leaves it unclear as to who is ultimately responsible. There is a recent focus in models on the presence of defined roles, decision-making structures, and measurable performance (Ewim et al., 2024; Mihalicz, 2025). Bridged with communication and management systems, cross-functional collaboration has the power to drive efficiency, innovation, and strategic motifs (Simms, 2020; Jackson, 2021; Mihalicz, 2025).

Relationship Between Cross Functional Process Efficiency and Delays

Cross-functional efficiency and delays are heavily related, as cross-departmental collaboration has a direct impact on speed and quality. Efficient systems have as few bottlenecks and redundancies as possible; unclear responsibilities, poor coordination, or a fragmented workflow often manifest in delays. Thus, delays are functions and functions of poor cross-functional processes (Conquest, 2024; Ray, 2024).

Delays usually reveal inefficiencies that are not readily apparent. For instance, late procurements stop operations and delayed financial approvals; a delay stalls execution (where one gap goes through functions) (Mahadik et al., 2024). The main reasons are insufficient communication, lack of task ownership, contrasting priorities, and the application of silo structures rather than integrated systems, which lead to a lack of responsiveness and opportunities (Temitope, 2025). Constant delays increase expenses, reduce satisfaction of customers and eliminate confidence. On the contrary, those organisations that have a strong sense of accountability, positive communication, and are integrated digitally have fewer disruptions and perform better (Smet et al., 2024). There is a need to reduce delay and maintain competitiveness by ensuring that there is efficiency across the functions.

Relationship Between Cross Functional Process Efficiency and Communication Gaps

Inefficient cross-functional communication leads to delays and poor performance. Silos, conflicting objectives and jargon impede collaboration (Ewim et al., 2024) Standardized protocols and tools minimize inefficiency (Zartis, 2025), and leadership promotes accountability and transparency (Vasudevan & Kumar, 2025).

Theoretical Framework

Social Exchange Theory (SET)

Social Exchange Theory is a view of organizational relationships in terms of reciprocal exchanges of resources. In cross-functional processes, accountability and communication are driving cooperation. Recognition leads to collaboration, and poor mechanisms or lack of communications lead to lack of trust, which results in inefficiencies, delays, and reluctance to share information among departments (Blau, 1964).

Contingency Theory

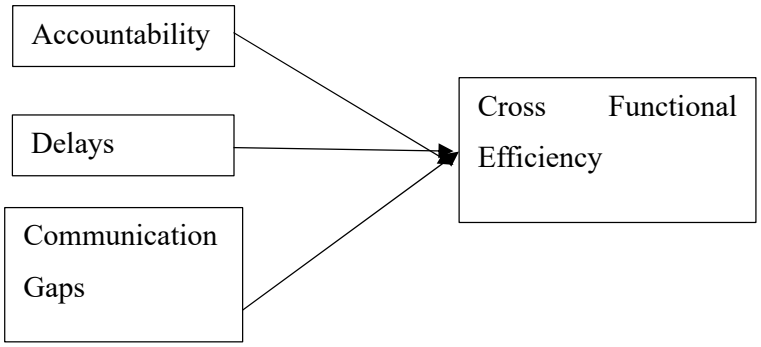
Contingency Theory holds that no one management structure works for all, cross-functional efficiency is a matter of the right balancing of accountability, communication, and project

mechanism in terms of environmental conditions to effectively adapt to delays, disruptions, and uncertainties (Fiedler, 1964; Lawrence & Lorsch, 1967).

Resource-Based View (RBV)

Resource-Based View (Barney, 1991) suggests that competitive advantage is a product of unique, valuable, rare and inimitable resources. Human capital, knowledge sharing and efficient workflows are strategic assets in cross-functional processes. Effective communication mechanisms, responsibility and reduced delays promote efficiency and maintain competitiveness. Failure wastes and undermines competitiveness. In conjunction with Social Exchange Theory (Blau, 1964) and Contingency Theory (Fiedler, 1964; Lawrence and Lorsch, 1967), RBV offers a premise connecting accountability, communication, and adaptability to cross-functional efficiency at individual, organizational, and strategic levels.

Empirical Framework



In addition to theory, evidence from practice is presented by testing the relationships between accountability, delays, communication shorts, (independent variables), and cross-functional process efficiency (dependent variable) in an empirical framework. Operational efficiency is dependent on the coordination of production, procurement, logistics, and quality function; in Saudi Arabia, this entails accountability, delay management, and effective communication (Ajayi & Chinda, 2022; Sun, 2024). Accountability provides ownership and coherence, and its lack makes everything inefficient and perilous from an ethical point of view (Brennan, & Solomon, 2008; Mayer, Allala, & Milon, 2012; Bovens, 2007). Delays due to poor alignment and logistics problems lead to overruns, less trust, and stakeholder dissatisfaction (Hamid et al., 2025; Saha et al., 2023). Transparent structures, distributed terminology and digital collaboration tools support productivity and morale (Alruwaili, 2024; Ewim et al., 2024;

Vasudevan & Kumar, 2025), while KPIs and analytics using AI support in identifying inefficiencies (Learning-gate.com, 2025).

Chapter Summary

This chapter contrasted theoretical and empirical underpinnings of cross-functional effectiveness, with a focus on accountability, delays, and communication breakdown. Accountability provides ownership and clarity; coordination and performance are degraded by delays and poor communication. The chapter built on Social Exchange, Contingency, and Resource Based theories together with empirical evidence to provide a basis for the methodology used to analyse these variables in practice.

METHODOLOGY

Introduction

Therefore, the research methodology will give a systematic investigation to the cross-functional processes in the industrial organizations of Saudi Arabia where there are complex interdependent functions that often show inefficiency. A quantitative approach is used to quantify gaps in accountability, delays, and communications breakdowns, and to statistically analyse representative samples for validity and reliability. Since inefficiencies increase costs and adversely impact performance, this approach will ensure that credible results are obtained relevant to the Vision 2030's objectives for the development of the industrial base. The chapter includes information about research design, sampling, data collection, and data analysis, as well as discussions of validity, reliability, and ethics. These processes enhance rigor and provide empirical evidence for the continuous improvement of organizational efficiency and competitiveness in the industrial sector of Saudi Arabia.

Research Design

A cross-sectional quantitative design is the best method to test the relationship between the organizational variables and cross-functional process efficiency. Quantitative methods enable a numerical measurement, statistical tests, and generalizable conclusions (Bhandari, 2020; Streefkerk, 2019). Cross-sectional data collection in one stage gathers current tendencies in Saudi industrial organizations (Wang & Cheng, 2020; National University, 2023). This will be a cost- and time-efficient approach that will allow us to bring knowledge-based evidence to managers and policymakers. Using self-administered questionnaires for reliability, reducing bias, and for inferential analysis of accountability, delays, and communication gaps (Thomas, 2023; Cherry, 2024).

Population and Sampling

The sample consists of employees from Saudi industrial organizations directly involved in the cross-functional processes including operations, supply chain, production, human resources, finance, and project management. The study is not industry specific, but targets multiple industries including petrochemicals, construction, manufacturing and energy. This inclusive approach captures a wide range of views and ensures that results will remain generalizable, while also helping to address issues of accountability, delays, and poor communication.

To determine the appropriate sample size, the study applies Green's (1991) rule of thumb for multiple regression analysis:

$$N \geq 50 + 8m$$

where m represents the number of independent variables. Since this study includes three independent variables, the minimum required sample size is:

$$N \geq 50 + 8(3) = 74$$

Therefore, at least 74 responses are required to ensure sufficient statistical power. To strengthen validity and to account for potential non-responses or incomplete surveys, the study aims to collect data from **80 to 100 respondents**.

A purposive sampling technique will be used to select participants. Regardless of this fact, this non-probability technique is suitable since it helps to make certain that only employees whose cross-functional duties are relevant are considered in the research. The participants will be reached via professional contacts, business contacts, and liaisons with the human resource departments of chosen organizations. The purposive strategy offsets the requirements of targets and their relevance with the practical aspects of reaching out to the employees working in active industrial settings (Campbell et al., 2020; Nikolopoulou, 2022).

Through this sampling design, the research guarantees a sample-driven representation of a varied and representative sample of the employees engaged in cross-functional procedures in the industrial organisations covering Saudi Arabia. This enhances the external validity of the findings to the outside world and contributes to the study to operational efficiency optimization efforts.

Research Instrument

A structured questionnaire is the major data collection instrument to be used in the study; the questionnaire shall be structured in alignment with the objectives of this research to provide a reflection of the perceptions of employee of accountability, and process delays, cross-functional process efficiency in industrial companies based in Saudi Arabia. The questionnaire will be separated into five parts, where the first section will contain the demographic information, and the remaining four parts will be used to represent the study variables. A five-point Likert scale, based on 1 = Strongly Disagree to 5 = Strongly Agree is used to measure all construct-related items. This scale has been extensively used in management and organizational

research because respondents can be asked to show different levels of consensus as well as because it offers enough variation to be analysed statistically.

Section A: Demographic Information

This section collects information on gender, age, position level, department, years of experience, and Industry sector. These variables help contextualize the data and enable additional descriptive analysis.

Section B: Accountability (IV1)

1. Responsibilities for cross-functional tasks are clearly assigned and documented.
2. Owners follow through on commitments across departments.
3. Managers hold individuals and teams answerable for agreed outputs and timelines.
4. Performance feedback is used to address missed handoffs or milestones.
5. Escalation paths are clear when accountability issues arise between functions.

Section C: Process Delays (IV2)

1. Approvals and sign-offs often slow down cross-functional work.
2. Handoffs between departments frequently create waiting time.
3. Resource constraints (people/equipment/systems) regularly cause schedule slippage.
4. Rework due to upstream issues commonly adds extra cycle time.
5. External dependencies (vendors/partners) frequently delay our processes.

Section D: Communication Gaps (IV3)

1. Information needed for handoffs is often unclear or incomplete.
2. Teams use inconsistent channels/tools, leading to missed messages.
3. Updates on changes (scope, schedule, requirements) do not reach all affected parties.
4. Differences in terminology/definitions across functions cause confusion.
5. Siloed behaviour limits timely sharing of critical information.

Section E: Cross-Functional Process Efficiency (DV)

1. Cross-functional tasks are typically completed on or ahead of schedule.
2. Cycle times for end-to-end processes are continuously improving.
3. Handoffs between departments are smooth with minimal waiting.
4. Rework is rare because upstream inputs are accurate and complete.
5. Overall, our cross-functional workflows achieve high productivity.

The questionnaire is designed to be clear, concise, and easy to complete within 10–15 minutes. It will be distributed electronically to maximize accessibility and response rates.

Validity and Reliability

The validity and reliability of the research instrument must be ensured to ensure that the study yields credible and true results. Validity indicates the degree to which the instrument is able to measure what it is supposed to measure. Validity is dealt with in various ways in this study. To begin with, content validity will be determined by consultations with academic experts and industry practitioners. With their review, the authors will make sure that the items of the questionnaire effectively represent the construct of accountability, process delays, communication gaps, and cross-functional process efficiency (Roebianto et al., 2023). Moreover, evaluation of construct validity shall be done through the exploratory factor analysis (EFA) in data analysis. This procedure will reveal whether the items of the variable groups form in line with the expectation hence ensuring that constructs are fortuitously operationalized (Dabbagh et al., 2023).

The internal consistency and the consistency of the instrument across time is referred to as reliability. To measure reliability, the pilot study will be implemented with a group of respondents of about 20 in order to determine the reliability of the subsequent survey (Khanal and Chhetri, 2024). The pilot results will be evaluated with the help of the Cronbach alpha coefficient. It is anticipated that the coefficient an individual yields 0.70 or more indicating that the items included in each variable are worth the reliability they achieve. In case any of the items have low reliability scores, they will either be amended or omitted before the actual collection of data (UCLA, 2021).

These steps will combine to make the instrument valid and reliable to increase the findings strength. The careful approach to validity and reliability makes the study much stronger in

terms of its capacity to make meaningful and accurate conclusions regarding the factors that affect the cross-functional process efficiency of Saudi industrial organizations.

Data Collection Procedures

Data will be collected using a structured self-administered questionnaire distributed online (Google Forms/Microsoft Forms) to industrial employees across Saudi Arabia for the convenience and wide coverage of employees. A pilot test of 20 respondents will make adjustments to clarity and reliability before being administered to 80-100 subjects. Human resource departments and networks will facilitate access, and formal cooperation requests are sent to management. Participation will be voluntary and confidential. Data collection will take place for 4-6 weeks with reminders, pre-analysis in SPSS to ensure reliability, and adherence to study objectives.

Data Analysis Techniques

The data will be analysed with the help of the software package, that is: for this way systematic and total testing of the research-objectives will guarantee. First, descriptive statistics will be used to conduct a summary of demographic variables, instances of distribution and key trends are through the use of frequency, percentage, means and standard deviations (Hayes 2024). Reliability will then be tested using Cronbach's alpha where a value of 0.70 or higher is acceptable for internal consistency (Adamson & Prion, 2023). Factor validity is to be verified using Kaiser Meyer Olkin (KMO) Measure (>0.60) and Bartlett's Test of Sphericity, attesting data appropriateness for analyses (Glen, 2016). Pearson correlation will assess the strength and direction of relationships between accountability, delays, communication gaps, and cross-functional efficiency, with significance tested at $p < 0.05$ (Turney, 2022). Finally, multiple regression will evaluate the predictive effects of the independent variables, reporting R^2, standardized coefficients (β), and significance to confirm model fit (Sun et al., 2023). This multi-step approach enhances rigor, validity, and supports evidence-based recommendations for improving Saudi industrial process efficiency.

Ethical Consideration

Ethical standards are in place to ensure the rights and dignity of the participants are protected. Informed consent will be obtained with voluntary participation and rights of withdrawal explained. Confidentiality and anonymity is assured through the exclusion of identifiers and analysis of aggregate data. Information will be securely held in password protected systems.

Integrity and transparency will govern the research and the findings will be presented in a truthful way for academic purposes only.

Chapter Summary

This chapter presented the quantitative cross-sectional design of 80-100 industrial employees engaged in cross-functional processes. Data will be collected using structured questionnaires and will be tested for validity and reliability. Ethical safeguards provide consent, confidentiality and security. Analysis consists of descriptive statistics, correlations and regressions thereby providing a solid basis for the following findings.

DATA ANALYSIS AND PRESENTATION OF RESULTS OF FINDINGS

Introduction

This chapter presents the analysis of data examining the relationships between accountability, process delays, communication gaps, and cross-functional process efficiency. It begins with descriptive statistics outlining respondents' demographic profiles, followed by the mean scores and variability of the main study variables. Reliability was confirmed using Cronbach's Alpha, while the KMO and Bartlett's tests verified data suitability. Pearson correlation identified the strength and direction of relationships among variables, and multiple regression analyses tested the proposed hypotheses to determine the influence of accountability, delays, and communication gaps on efficiency. The results are summarised and linked to the research objectives, forming the basis for the next chapter's conclusion.

Descriptive Analysis of Demographic

Table 4.1 Statistics

		Gender	Age	Position Level	Years of Service in Current Company	Industry Sector
N	Valid	100	100	100	100	100
	Missing	0	0	0	0	0

Table 4.2 Gender

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Female	54	54.0	54.0	54.0
	Male	46	46.0	46.0	100.0
	Total	100	100.0	100.0	

Table 4.3 Age

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	18-25	36	36.0	36.0	36.0
	26-35	39	39.0	39.0	75.0
	36-45	16	16.0	16.0	91.0
	46-55	8	8.0	8.0	99.0
	56 and above	1	1.0	1.0	100.0
	Total	100	100.0	100.0	

Table 4.4 Position Level

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Middle Management	8	8.0	8.0	8.0
	Non-supervisory staff	65	65.0	65.0	73.0
	Senior Management	2	2.0	2.0	75.0
	Supervisor / Team Leader	25	25.0	25.0	100.0
	Total	100	100.0	100.0	

Table 4.5 Years of Service

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1-3 years	33	33.0	33.0	33.0
	4-6 years	21	21.0	21.0	54.0
	7-10 years	7	7.0	7.0	61.0
	Less than 1 year	38	38.0	38.0	99.0
	more than 10 years	1	1.0	1.0	100.0
	Total	100	100.0	100.0	

Table 4.6 Industry Sector

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Automotive	33	33.0	33.0	33.0
	Chemical / Petrochemical	8	8.0	8.0	41.0
	Electronics / Electrical	27	27.0	27.0	68.0
	Food and Beverage Manufacturing	22	22.0	22.0	90.0
	Textile / Garments	10	10.0	10.0	100.0
	Total	100	100.0	100.0	

A total valid of 100 responses (54% female/46% men) were obtained. The workforce was young with majority of the respondents being between 26-35 years (39%), 18-25 years old, (36%). Most occupied non-supervisory (65%), more minor proportions occupied the supervisory or team leader category (25%), middle management (8%), and the top management (2%). Most of them had a relatively short experience working in their current company (less than one year) (38%), as well as a period of one to three years (33%). Automobile (33%), electronics/electrical (27%), and food and beverage (22) business sectors were widely represented in respondents who had a wide span and diversity of manufacturing-related organisations.

Descriptive Analysis of Variables

Table 4.7 Cross Functional Process Efficiency

	N	Minimum	Maximum	Mean	Std. Deviation
1. Cross-functional tasks are typically completed on or ahead of schedule.	100	1	5	3.57	1.559
2. Cycle times for end-to-end processes are continuously improving.	100	1	5	3.51	1.403
3. Handoffs between departments are smooth with minimal waiting.	100	1	5	3.44	1.472
4. Rework is rare because upstream inputs are accurate and complete.	100	1	5	3.34	1.485
5. Overall, our cross-functional workflows achieve high productivity.	100	1	5	3.51	1.630
Valid N (listwise)	100				

Table 4.8 Accountability

	N	Minimum	Maximum	Mean	Std. Deviation
1. Responsibilities for cross-functional tasks are clearly assigned and documented.	100	1	5	3.40	1.550
2. Owners follow through on commitments across departments.	100	1	5	3.32	1.523
3. Managers hold individuals and teams answerable for agreed outputs and timelines.	100	1	5	3.34	1.628
4. Performance feedback is used to address missed handoffs or milestones.	100	1	5	3.52	1.382
5. Escalation paths are clear when accountability issues arise between functions.	100	1	5	3.35	1.388
Valid N (listwise)	100				

Table 4.9 Process Delays

	N	Minimum	Maximum	Mean	Std. Deviation
1. Approvals and sign-offs often slow down cross-functional work.	100	1	5	2.78	1.460
2. Handoffs between departments frequently create waiting time.	100	1	5	2.62	1.420
3. Resource constraints (people/equipment/systems) regularly cause schedule slippage.	100	1	5	2.57	1.416
4. Rework due to upstream issues commonly adds extra cycle time.	100	1	5	2.66	1.423
5. External dependencies (vendors/partners) frequently delay our processes.	100	1	5	2.55	1.527
Valid N (listwise)	100				

Table 4.10 Communication Gaps

	N	Minimum	Maximum	Mean	Std. Deviation
1. Information needed for handoffs is often unclear or incomplete.	100	1	5	2.41	1.538
2. Teams use inconsistent channels/tools, leading to missed messages.	100	1	5	2.53	1.473
3. Updates on changes (scope, schedule, requirements) do not reach all affected parties.	100	1	5	2.51	1.514
4. Differences in terminology/definitions across functions cause confusion.	100	1	5	2.79	1.472
5. Siloed behaviour limits timely sharing of critical information.	100	1	5	2.65	1.424
Valid N (listwise)	100				

The outcome of descriptive analysis reveals that there is moderately high cross-functional efficiency, with means scores ranging between 3.34 and 3.57, demonstrating a fairly satisfactory productivity, in general. The accountability was average (3.32–3.52), and it

indicated that there were existing and yet to be improved ownership and feedback mechanisms. Nevertheless, there were low scores on process delays (2.55-2.86) due to slow approvals and lack of resources, low scores on communication gaps (2.41-2.85) due to informational slowness and tools inconsistency. In general, the efficiency and accountability are average, meanwhile, communication and delays are the primary challenges to effective cross-functional performance.

Reliability and Validity Test

Table 4.11 Reliability Test

Variables	No. of Items	Cronbach Alpha
Cross-Functional Process Efficiency (DV)	5	.962
Accountability (IV1)	5	.957
Process Delays (IV2)	5	.958
Communication Gaps (IV3)	5	.961

Table 4.12 KMO and Bartlett Test

KMO and Bartlett's Test

Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		.813
Bartlett's Test of Sphericity	Approx. Chi-Square	702.515
	df	6
	Sig.	.000

The reliability test results in Table 4.11 indicate that all variables achieved excellent internal consistency, with Cronbach's Alpha values exceeding 0.95—specifically, 0.962 for Cross-Functional Process Efficiency, 0.957 for Accountability, 0.958 for Process Delays, and 0.961 for Communication Gaps. These results confirm that the measurement items used in this study are highly reliable. Furthermore, the KMO and Bartlett's Test (Table 4.12) show a KMO value of 0.813, which exceeds the acceptable threshold of 0.6, indicating sampling adequacy. Bartlett's Test of Sphericity was significant ($\chi^2 = 702.515$, $p < 0.001$), confirming that the data are suitable for factor analysis and establishing the validity of the measurement constructs.

Pearson Correlation

Table 4.13 Pearson Correlation

Correlations

		DV	IV1	IV2	IV3
DV	Pearson Correlation	1	.971**	-.886**	-.931**
	Sig. (2-tailed)		.000	.000	.000
	N	100	100	100	100
IV1	Pearson Correlation	.971**	1	-.896**	-.933**
	Sig. (2-tailed)	.000		.000	.000
	N	100	100	100	100
IV2	Pearson Correlation	-.886**	-.896**	1	.945**
	Sig. (2-tailed)	.000	.000		.000
	N	100	100	100	100
IV3	Pearson Correlation	-.931**	-.933**	.945**	1
	Sig. (2-tailed)	.000	.000	.000	
	N	100	100	100	100

**. Correlation is significant at the 0.01 level (2-tailed).

This table presents the Pearson correlation analysis results between the dependent variable (DV), cross-functional process efficiency, and the three independent variables (IVs): accountability (IV1), process delays (IV2), and communication gaps (IV3). The results show that accountability has a very strong positive correlation with process efficiency ($r = .971$, $p < .01$), suggesting that higher accountability is associated with greater efficiency. In contrast, both process delays ($r = –.886$, $p < .01$) and communication gaps ($r = –.931$, $p < .01$) exhibit strong negative correlations with process efficiency, indicating that frequent delays and communication issues significantly reduce efficiency. Additionally, significant relationships also exist among the independent variables, with accountability showing a strong negative correlation with both process delays ($r = –.896$, $p < .01$) and communication gaps ($r = –.933$, $p < .01$). Process delays and communication gaps, on the other hand, are strongly positively correlated ($r = .945$, $p < .01$). All correlations are statistically significant at the 0.01 level, confirming the strength and direction of the relationships among the study variables.

Regression

Table 4.14 Cross-Functional Process Efficiency (DV) to Accountability (IV1) Regression

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.971[a]	.943	.943	.33692

a. Predictors: (Constant), IV1

ANOVA[a]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	185.408	1	185.408	1633.322	.000[b]
	Residual	11.125	98	.114		
	Total	196.532	99			

a. Dependent Variable: DV

b. Predictors: (Constant), IV1

Coefficients[a]

Model		Unstandardized Coefficients B	Unstandardized Coefficients Std. Error	Standardized Coefficients Beta	t	Sig.
1	(Constant)	.124	.089		1.382	.170
	IV1	.989	.024	.971	40.414	.000

a. Dependent Variable: DV

Table 4.15 Cross-Functional Process Efficiency (DV) to Process Delays (IV2) Regression

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.886[a]	.785	.783	.65688

a. Predictors: (Constant), IV2

ANOVA[a]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	154.246	1	154.246	357.468	.000[b]
	Residual	42.287	98	.431		
	Total	196.532	99			

a. Dependent Variable: DV

b. Predictors: (Constant), IV2

Coefficients[a]

Model		Unstandardized Coefficients B	Unstandardized Coefficients Std. Error	Standardized Coefficients Beta	t	Sig.
1	(Constant)	5.927	.145		40.760	.000
	IV2	-.930	.049	-.886	-18.907	.000

a. Dependent Variable: DV

Table 4.16 Cross-Functional Process Efficiency (DV) to Communication Gaps (IV3) Regression

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.931[a]	.867	.866	.51566

a. Predictors: (Constant), IV3

ANOVA[a]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	170.474	1	170.474	641.118	.000[b]
	Residual	26.058	98	.266		
	Total	196.532	99			

a. Dependent Variable: DV

b. Predictors: (Constant), IV3

Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients		
		B	Std. Error	Beta	t	Sig.
1	(Constant)	5.923	.110		54.036	.000
	IV3	-.950	.038	-.931	-25.320	.000

a. Dependent Variable: DV

The regression results show that Accountability (IV1), Process Delays (IV2), and Communication Gaps (IV3) each have significant relationships with Cross-Functional Process Efficiency (DV). Accountability demonstrated a strong positive effect ($R^2 = 0.943$, $\beta = 0.971$, $p < 0.001$), indicating that higher accountability enhances process efficiency. Conversely, Process Delays showed a strong negative relationship ($R^2 = 0.785$, $\beta = -0.888$, $p < 0.001$), suggesting that increased delays substantially reduce efficiency. Similarly, Communication Gaps also had a significant negative impact ($R^2 = 0.887$, $\beta = -0.931$, $p < 0.001$), meaning poor communication greatly hinders cross-functional performance. Overall, the models exhibit high explanatory power, confirming that accountability improves efficiency, while delays and communication gaps act as major barriers to effective cross-functional collaboration.

Hypothesis Result

Table 4.17 Hypothesis result

Hypothesis	Result
H1: Accountability positively associated with cross-functional process efficiency.	Accepted
H2: Process delays negatively associated with cross-functional process efficiency.	Accepted
H3: Communication gaps negatively associated with cross-functional process efficiency.	Accepted

The hypothesis testing results indicate that all three proposed hypotheses were accepted. **H1** confirmed that accountability is positively associated with cross-functional process efficiency, suggesting that clear responsibilities and ownership enhance workflow outcomes. **H2** showed that process delays are negatively associated with efficiency, meaning that increased bottlenecks and approval lags reduce performance. Similarly, **H3** revealed that communication gaps negatively affect cross-functional efficiency, highlighting that poor information flow and inconsistent communication significantly hinder collaboration across departments.

Chapter Summary

This chapter presented the analysis of respondents' demographics, descriptive statistics, and the results of reliability, validity, correlation, and regression tests. Findings showed a balanced gender distribution, mostly young non-supervisory employees with short tenure. Descriptive results indicated moderate levels of cross-functional efficiency, accountability, process delays, and communication gaps. Constructs proved to be very reliable indicators and suitable data to be used in a factor analysis. Correlation test and regression analysis demonstrated that accountability has a great positive effect on cross-functional efficiency whereas process delays and communication gap had great negative effects. In general, the findings confirm all the three hypotheses, making accountability one of the critical factors of efficiency and delays and communication problems one of the most significant obstacles.

CONCLUSION AND RECOMMENDATIONS

Conclusion

This paper examined how accountability, delays in processes, and lack of communication impacted efficiency in cross-functional processes in the Saudi Arabian industrial sector. The findings have proved that accountability has a major positive effect on efficiency, whereas delays and communication gaps are the significant impediments to the performance of the workflow. Each of the hypotheses was proven, which justified the use of the Social Exchange Theory, Contingency Theory, and the Resource-Based View to explain organisational collaboration. These results highlight the need to have accountability structures, timely operations, and effective communication systems to enhance coordination, build trust and operational excellence in accordance with the Vision 2030 objectives of Saudi Arabia.

Recommendations

In order to increase the cross-functional effectiveness of the industrial sector in Saudi Arabia, a number of practical solutions are offered. Accountability frameworks within organisations need to be enhanced by defining roles, responsibilities and performance measures with respect to the governance reforms in Vision 2030. The adoption of online performance indicators and periodic audit of accountability could foster the spirit of transparency and trust among departments. To reduce delays in the processes, companies are recommended to implement agile project management models, automate the approval systems, and apply AI-based scheduling and monitoring systems to identify and treat bottlenecks in time. To minimise the communication gaps, it is important to invest in unified collaboration systems, like ERP or cloud-based systems which should be supplemented with regularised reporting processes and regular interdepartmental meetings to ensure constant flow of information.

The policymakers at the national level should facilitate cross-industry benchmarking, create incentives towards digital transformation, and create special training programmes to boost soft skills in the area of communication, teamwork, and accountability. The knowledge sharing and innovation in workflow management will also be encouraged by encouraging the process of partnerships between the industrial firms and the technology providers. All of these steps will assist Saudi organisations to build more robust, open, and dynamic cross-functional systems, which support the overall goals of Vision 2030 in terms of operational excellence and global competitiveness. Further studies must move towards longitudinal and comparative designs to capture the changes over time and incorporate other variables, including leadership,

organisational culture and digital readiness, to gain more insight into the efficiency drivers. Additionally, the investigation of the role of new technologies, in particular, AI-based collaborative tools, may open new avenues of reinforcing the performance of cross-functional teams in the current industrial environment.

Implications of Further Study

In theory, this research adds to the body of literature by establishing accountability, delay management and communication as the main factors of cross-functional efficiency and organisational performance. It empowers the current theories that emphasise the significance of flexibility, trust and communication as strategic assets. In a practical sense, the results inform managers and policymakers on how to implement well-defined accountability systems, the use of digital project management tools to minimise delays, and improved cooperation by means of open communication systems. These are essential practises that organisations need to become agile, innovative and competitive in changing industrial environments.

REFERENCES

Abdallah, A. A., Shaawat, M. E., & Almohassen, A. S. (2023). Causes of miscommunication leading to project delays and low work quality in the construction industry of Saudi Arabia. *Ain Shams Engineering Journal*, *15*(3), 102447. https://doi.org/10.1016/j.asej.2023.102447

Abedalrhman, K., & Alzaydi, A. (2024). Saudi Arabia's Strategic Leap towards a Diversified Economy and Technological Innovation. *SSRN Electronic Journal*. https://doi.org/10.2139/ssrn.5048258

Adamson, K. A., & Prion, S. (2023). Reliability: Measuring Internal Consistency Using Cronbach's α. Clinical Simulation in Nursing, 9(5), e179–e180. https://doi.org/10.1016/j.ecns.2012.12.001

Adegbola, E., Adegbola, D., Amajuoyi, N. P., Benjamin, & Adeusi, N. K. B. (2024). Fostering product development efficiency through cross-functional team leadership: Insights and strategies from industry experts. International Journal of Management & Entrepreneurship Research, 6(5), 1733–1753.

Ahmad, T., Boit, J., & Aakula, A. (2023, April 12). The Role of Cross-Functional Collaboration in Digital Transformation. ResearchGate. https://www.researchgate.net/publication/389744145_The_Role_of_Cross-Functional_Collaboration_in_Digital_Transformation

Ahmed, S. (2024). Creating Resilience and Integration with Cross-Functional Supply Chain Planning. https://research.chalmers.se/publication/541208/file/541208_Fulltext.pdf

Ajayi, B. O., & Chinda, T. (2022). Impact of Construction Delay-Controlling Parameters on Project Schedule: DEMATEL-System Dynamics Modeling Approach. Frontiers in Built Environment, 8. frontiersin. https://doi.org/10.3389/fbuil.2022.799314

Alruwaili, M. H. (2024). Understanding and Addressing Communication Challenges in the Construction Industry in Saudi Arabia. Sdl.edu.sa. https://drepo.sdl.edu.sa/items/58d7ff6b-6d51-4496-b7d6-6a6160adb12f/full

Alshakrit, A. K. S., Supeni, E. E., & Zahari, N. I. (2019). *CAUSES AND EFFECTS OF DELAYS IN SAUDI ARABIAN CONSTRUCTION PROJECTS*. https://ikprress.org/index.php/JGEMBR/article/download/4721/4364/8672

Attah, R. U., Garba, B. M. P., Ozoudeh, I. G., & Iwuanyanwu, O. (2024). Cross-functional team dynamics in technology management: a comprehensive review of efficiency and innovation enhancement. https://www.fepbl.com/index.php/estj/article/view/1756/2011

Attas, A. A. (2025). Impact of Organizational Structure on Operational Excellence in Saudi Organizations. International Journal of Management and Applied Research, 12(2), 98–123. https://www.ijmar.org/v12n2/25-007.html

Bageis, A. S. (2024). An Investigation into the Causes of Payment Delays and Deliberate Delay Tactics in Public Construction Projects in Saudi Arabia. *Buildings*, *14*(6), 1792–1792. https://doi.org/10.3390/buildings14061792

Bano, M., Zowghi, D., & Sarkissian, N. (2016). Empirical study of communication structures and barriers in geographically distributed teams. IET Software, 10(5), 147–153. https://doi.org/10.1049/iet-sen.2015.0112

Barney, J. (1991). Firm Resources and Sustained Competitive Advantage. Journal of Management, 17(1), 99–120. https://doi.org/10.1177/014920639101700108

Bhandari, P. (2020, June 12). What Is Quantitative research? | Definition, Uses and Methods. Scribbr. https://www.scribbr.com/methodology/quantitative-research/

Blau, P. M. (1964). Justice in social exchange. Sociological Inquiry, 34(2), 193–206. https://doi.org/10.1111/j.1475-682X.1964.tb00583.x

Bovens, M. (2007). Analysing and Assessing Accountability: A Conceptual Framework. European Law Journal, 13(4), 447–468. https://doi.org/10.1111/j.1468-0386.2007.00378.x

Brennan, N. M., & Solomon, J. (2008). Corporate governance, accountability and mechanisms of accountability: an overview. Accounting, Auditing & Accountability Journal, 21(7), 885–906. https://doi.org/10.1108/09513570810907401

Campbell, S., Greenwood, M., Prior, S., Shearer, T., Walkem, K., Young, S., Bywaters, D., & Walker, K. (2020). Purposive Sampling: Complex or Simple? Research Case Examples. Journal of Research in Nursing, 25(8), 652–661. NCBI. https://doi.org/10.1177/1744987120927206

Carter, L. (2024, May 15). Cultivating a Culture of Accountability. Best Practice Institute - Blog. https://blog.bestpracticeinstitute.org/cultivating-a-culture-of-accountability/

Cherry, K. (2024, June 23). How Do Cross-Sectional Studies Work? Verywell Mind. https://www.verywellmind.com/what-is-a-cross-sectional-study-2794978

Conquest, M. (2024, December 16). Cross-Departmental Collaboration: the Definitive Guide. Virtosoftware. https://www.virtosoftware.com/team/cross-departmental-collaboration/

Dabbagh, A., Seens, H., Fraser, J., & MacDermid, J. C. (2023). Construct validity and internal consistency of the Home and Family Work Roles Questionnaires: a cross-sectional study with exploratory factor analysis. BMC Women's Health, 23(1). https://doi.org/10.1186/s12905-023-02199-1

Ewim, N. C. P.-M., Godwin, N., Adams, N., Okeke, C., & Mokogwu, N. C. (2024). Developing a cross-functional team coordination framework: A model for optimizing business operations. International Journal of Frontline Research in Multidisciplinary Studies, 4(1), 015–034. https://doi.org/10.56355/ijfrms.2024.4.1.0030

Fiedler, Fred. E. (1964). A Contingency Model of Leadership Effectiveness. Advances in Experimental Social Psychology, 1(1), 149–190. ScienceDirect. https://doi.org/10.1016/s0065-2601(08)60051-9

George, A. S. (2024). The Fourth Industrial Revolution: A Primer on Industry 4.0 and its Transformative Impact. *Partners Universal Innovative Research Publication*, *2*(1), 16–40. https://doi.org/10.5281/zenodo.10671872

Ghaleb, M. M. S., & Piaralal, S. K. (2025). *Information and Communication with Business or Organization: A Thematic Case Study Analysis of Two Communication Challenges*. https://revista.profesionaldelainformacion.com/index.php/EPI/article/download/87960/63885/300971

Glen, S. (2016, May 11). Kaiser-Meyer-Olkin (KMO) Test for Sampling Adequacy. Statistics How To. https://www.statisticshowto.com/kaiser-meyer-olkin/

Gohar, H. (2025). Digital Transformation of Construction Planning in Saudi Arabia's Giga Projects: Driving Vision 2030 Through Smart Delivery Models. International Research Journal of Modernization in Engineering Technology and Science. https://doi.org/10.56726/IRJMETS76058

Green, S. B. (1991). How Many Subjects Does It Take To Do A Regression Analysis. Multivariate Behavioral Research, 26(3), 499–510. https://doi.org/10.1207/s15327906mbr2603_7

Guendouz, A. A., & Ouassaf, S. M. (2020). The Economic Diversification in Saudi Arabia under the Strategic Vision 2030. *Academy of Accounting and Financial Studies Journal*, *24*(5), 1–23. https://www.researchgate.net/publication/346080275_The_Economic_Diversification_in_Saudi_Arabia_under_the_Strategic_Vision_2030

Hamid, A. A., Eshag, E. A. E., Awashreh, R., & Musa, A. G. A. N. (2025). Unveiling manufacturing delays causes and implications in Sudanese industries: A study on manufacturing sector. International Journal of Innovative Research and Scientific Studies, 8(1), 1215–1223. https://doi.org/10.53894/ijirss.v8i1.4571

Hayes, A. (2024). Descriptive statistics: Definition, overview, types, example. Investopedia. https://www.investopedia.com/terms/d/descriptive_statistics.asp

Insights. (2023, August 17). *The Importance of Transparency and Accountability in Corporate Governance - Insights*. Insightss.co. https://insightss.co/blogs/the-importance-of-transparency-and-accountability-in-corporate-governance/

Jackson, L. (2021). The Effect of Cross-functional Integration on Organizational The Effect of Cross-functional Integration on Organizational Performance: A Look at Collaboration, Coordination, and Performance: A Look at Collaboration, Coordination, and Communication. https://digitalcommons.fiu.edu/cgi/viewcontent.cgi?article=6138&context=etd

Jenkins, A. (2024, November 15). *Supply Chain Disruptions: An Expert Guide*. Oracle NetSuite. https://www.netsuite.com/portal/resource/articles/erp/supply-chain-disruptions.shtml

Kamal, N., Raihan, N., & Maidin, A. (2023, November 22). Communication Barriers in Work Environment: Understanding Impact and Challenges. ResearchGate; Human Resource Management Academic Research Society. https://www.researchgate.net/publication/375903142_Communication_Barriers_in_Work_Environment_Understanding_Impact_and_Challenges

Keelson, S. A., Cúg, J., Amoah, J., Petráková, Z., Addo, J. O., & Jibril, A. B. (2024). The Influence of Market Competition on SMEs' Performance in Emerging Economies: Does Process Innovation Moderate the Relationship? *Economies*, *12*(11), 282. Mdpi. https://doi.org/10.3390/economies12110282

Khanal, B., & Chhetri, D. B. (2024). A Pilot Study Approach to Assessing the Reliability and Validity of Relevancy and Efficacy Survey Scale. Janabhawana Research Journal, 3(1), 35–49. https://doi.org/10.3126/jrj.v3i1.68384

Lawrence, P. R., & Lorsch, J. W. (1967). Differentiation and Integration in Complex Organizations. Administrative Science Quarterly, 12(1), 1–47. https://doi.org/10.2307/2391211

Lofgren, J. (2025, January 10). Fostering Accountability in the Workplace | FranklinCovey. FranklinCovey. https://www.franklincovey.com/blog/fostering-accountability-in-the-workplace/

Mahadik, N. S., Pakanati, N. D., Cherukuri, N. H., Jain, N. S., & Jain, N. S. (2024). Cross-Functional Team Management in Product Development. Cross-Functional Team Management in Product Development, 1(2), 270–294. https://doi.org/10.36676/mdmp.v1.i2.24

Mayer, D. M., Aquino, K., Greenbaum, R. L., & Kuenzi, M. (2012). Who Displays Ethical Leadership, and Why Does It Matter? An Examination of Antecedents and Consequences of Ethical Leadership. Academy of Management Journal, 55(1), 151–171.

McKinsey & Company. (2023). State of Organizations 2023. In *McKinsey & Company*. https://www.mckinsey.com/~/media/mckinsey/business%20functions/people%20and%20organizational%20performance/our%20insights/the%20state%20of%20organizations%202023/the-state-of-organizations-2023.pdf

Meluso, J. (2020, January 1). Networked Miscommunication: The Relationship Between Communication Networks, Misunderstandings, and Organizational Performance. https://www.researchgate.net/publication/353656605_Networked_Miscommunication_The_Relationship_Between_Communication_Networks_Misunderstandings_and_Organizational_Performance

Memon, A. H., Memon, A. Q., Khahro, S. H., & Javed, Y. (2023). Investigation of Project Delays: Towards a Sustainable Construction Industry. *Sustainability*, *15*(2), 1457. https://doi.org/10.3390/su15021457

Mihalicz, D. (2025, January 23). Cross-Functional Accountability and Authority - Effective Managers. Effective Managers. https://effectivemanagers.com/ceos/cross-functional-accountability-and-authority-enhancing-organizational-effectiveness/

Mushi, G. O., Ismail, I. J., & Mchopa, A. D. (2024). The mediating effect of cross-functional coordination on the link between procurement interpersonal skills and user satisfaction in public procurement. Social Sciences & Humanities Open, 10, 101072. https://doi.org/10.1016/j.ssaho.2024.101072

National University. (2023). What is qualitative vs. quantitative study? National University. https://www.nu.edu/blog/qualitative-vs-quantitative-study/

Nikolopoulou, K. (2022, August 11). What Is Purposive sampling? | Definition & Examples. Scribbr. https://www.scribbr.com/methodology/purposive-sampling/

Ray, M. (2024). Overcoming Decision Making Delays in Cross-Functional Teams - A Guide to Faster, Smarter Actions. Linkedin.com. https://www.linkedin.com/pulse/overcoming-decision-making-delays-cross-functional-teams-mainak-ray-hbk3c?utm_source=rss&utm_campaign=articles_sitemaps&utm_medium=google_news

Roebianto, A., Savitri, I., Sriyanto, A. S., & Mubarokah, L. (2023, March 9). Content validity: Definition and procedure of content validation in psychological research. ResearchGate. https://www.researchgate.net/publication/369171317_Content_validity_Definition_and_procedure_of_content_validation_in_psychological_research

Saha, S. K., Patil, A., Dwivedi, A., Pamucar, D., & Pillai, A. S. (2023). Analyzing the interactions among delay factors in construction projects: A multi criteria decision analysis. Reports in Mechanical Engineering, 4(1), 241–255. https://doi.org/10.31181/rme040116112023s

Sharma, A. (2024, July 12). Enhancing Cross-Functional Team Collaboration for Project Success. Linkedin.com. https://www.linkedin.com/pulse/enhancing-cross-functional-team-collaboration-project-abhinav-sharma-u5gtc

Simms, L. (2020). Mutual accountability and its impacts on cross-functional teams Mutual accountability and its impacts on cross-functional teams. https://digitalcommons.pepperdine.edu/cgi/viewcontent.cgi?article=2186&context=etd

Smet, A. D., D'Auria, G., Meijknecht, L., & Albaharna, M. (2024, October 31). Go, teams: When teams get healthier, the whole organization benefits. McKinsey & Company. https://www.mckinsey.com/capabilities/people-and-organizational-performance/our-insights/go-teams-when-teams-get-healthier-the-whole-organization-benefits

Smith, H. K. (2024, October 10). *The Role of Cross-Functional Collaboration in E-supply Chain Coordination: Effects on Innovation and...* ResearchGate; unknown. https://www.researchgate.net/publication/384807699_The_Role_of_Cross-Functional_Collaboration_in_E-supply_Chain_Coordination_Effects_on_Innovation_and_Performance

Stewart, V. R., Snyder, D. G., & Kou, C.-Y. (2021). We Hold Ourselves Accountable: A Relational View of Team Accountability. Journal of Business Ethics, 183(3), 691–712. https://doi.org/10.1007/s10551-021-04969-z

Streefkerk, R. (2019, April 12). Qualitative vs. quantitative research | differences, examples & methods. Scribbr. https://www.scribbr.com/methodology/qualitative-quantitative-research/

Sufyan, M., & Kumar, S. (2025). Information and Communication with Business or Organization: A Thematic Case Study Analysis of Two Communication Challenges. El Profesional de La Informacion, 34(1). https://doi.org/10.3145/epi.2025.ene.34110

Sun, Y. (2024). The study of the effect of performance accountability on performance management. Highlights in Business, Economics and Management, 32, 187–198. https://doi.org/10.54097/pvfcd854

Sun, Y., Wang, X., Zhang, C., & Zuo, M. (2023). Multiple Regression: Methodology and Applications. Highlights in Science, Engineering and Technology, 49, 542–548. https://doi.org/10.54097/hset.v49i.8611

Tariq, J., & Gardezi, S. S. S. (2022). Study the delays and conflicts for construction projects and their mutual relationship: A review. Ain Shams Engineering Journal, 14(1), 101815. Sciencedirect. https://doi.org/10.1016/j.asej.2022.101815

Temitope, A. (2025, March 24). Breaking Down Silos: Enhancing Communication Across Supply Chain Functions. https://www.researchgate.net/publication/390137688_Breaking_Down_Silos_Enhancing_Communication_Across_Supply_Chain_Functions

Thomas, L. (2023, May 8). Cross-Sectional study | definitions, uses & examples. Scribbr. https://www.scribbr.com/methodology/cross-sectional-study/

Turney, S. (2022, May 13). Pearson Correlation Coefficient (r). Scribbr. https://www.scribbr.com/statistics/pearson-correlation-coefficient/

Uchenna, R., Patrick, M., Gil-Ozoudeh, N. I., & Iwuanyanwu, N. O. (2024). Cross-functional team dynamics in technology management: a comprehensive review of efficiency and innovation enhancement. *Engineering Science & Technology Journal*, *5*(12), 3248–3265. https://doi.org/10.51594/estj.v5i12.1756

UCLA. (2021). What does Cronbach's alpha mean? Stats.oarc.ucla.edu. https://stats.oarc.ucla.edu/spss/faq/what-does-cronbachs-alpha-mean/

Vasudevan, M., & Kumar, B. S. (2025a). Evolving Strategies for Organizational Management and Performance Evaluation. Advances in Human Resources Management and Organizational Development, 177–208. https://doi.org/10.4018/979-8-3373-0149-5.ch010

Vasudevan, M., & Kumar, B. S. (2025b). View of Optimizing New Product Development: The role of cross-functional collaboration and leadership practices. Jisem-Journal.com. https://jisem-journal.com/index.php/journal/article/view/2973/1235

Vision 2030. (2019). *National Industrial Development and Logistics Program*. Vision2030.Gov.sa. https://www.vision2030.gov.sa/en/explore/programs/national-industrial-development-and-logistics-program

Vision 2030. (2025). *National Industrial Strategy*. Saudi Vision 2030. https://www.vision2030.gov.sa/en/explore/strategies/national-industrial-strategy

Wang, X., & Cheng, Z. (2020). Cross-sectional studies: Strengths, weaknesses, and recommendations. Chest, 158(1), 65–71. https://doi.org/10.1016/j.chest.2020.03.012

Zartis. (2025, March 25). How to Foster Effective Cross Functional Collaboration: A Step-by-Step Guide for Tech Leaders. Zartis. https://www.zartis.com/how-to-foster-effective-cross-functional-collaboration-a-step-by-step-guide-for-tech-leaders/

APPENDIX

Questionnaire

Section A: Demographic Information

Gender

- Male
- Female

Age

- 18-25
- 26-35
- 36-45
- 46-55
- 56 and above

Position Level

- Non-supervisory staff
- Supervisor / Team Leader
- Middle Management
- Senior Management

Years of Service in Current Company

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

Industry Sector

- Automotive
- Electronics / electrical
- Food and beverage manufacturing
- Textile / garments

- Chemical / petrochemical

Section B: Cross-Functional Process Efficiency (DV)

1. Cross-functional tasks are typically completed on or ahead of schedule.
2. Cycle times for end-to-end processes are continuously improving.
3. Handoffs between departments are smooth with minimal waiting.
4. Rework is rare because upstream inputs are accurate and complete.
5. Overall, our cross-functional workflows achieve high productivity.

Section C: Accountability (IV1)

1. Responsibilities for cross-functional tasks are clearly assigned and documented.
2. Owners follow through on commitments across departments.
3. Managers hold individuals and teams answerable for agreed outputs and timelines.
4. Performance feedback is used to address missed handoffs or milestones.
5. Escalation paths are clear when accountability issues arise between functions.

Section D: Process Delays (IV2)

1. Approvals and sign-offs often slow down cross-functional work.
2. Handoffs between departments frequently create waiting time.
3. Resource constraints (people/equipment/systems) regularly cause schedule slippage.
4. Rework due to upstream issues commonly adds extra cycle time.
5. External dependencies (vendors/partners) frequently delay our processes.

Section E: Communication Gaps (IV3)

1. Information needed for handoffs is often unclear or incomplete.
2. Teams use inconsistent channels/tools, leading to missed messages.
3. Updates on changes (scope, schedule, requirements) do not reach all affected parties.
4. Differences in terminology/definitions across functions cause confusion.
5. Siloed behaviour limits timely sharing of critical information.