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The Impact of Team Communication on Project Timelines in Trimtech Industries Doors and Hardware Company in Edmonton, Alberta, Canada

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1. Chapter 1: Introduction

The construction industry thrives on meticulous planning and adhering to strict deadlines. Efficient project delivery hinges on various factors, but effective team communication reigns supreme. Timely information exchange fosters collaboration, minimizes errors, and ensures tasks are completed as planned (Akintola et al., 2017). In construction projects involving hollow metal and wooden doors, clear communication between design teams, procurement specialists, and installers is crucial for seamless project flow. Delays or breakdowns in communication can lead to misunderstandings, rework, and ultimately, missed deadlines (Love et al., 2002).

1.1. Research Background

Effective communication in construction projects is well-established as a critical factor for success. Timely project information exchange fosters collaboration, reduces errors, and ensures tasks are completed on schedule (Chan et al., 2004; Zwikaël & Auer, 2019). Recent studies have explored this link between communication and project performance. For instance, Akintola et al. (2017) found that improved communication between project stakeholders can significantly reduce project delivery time. Similarly, Abdul Hamid et al. (2018) highlighted the importance of clear communication for mitigating delays in construction projects.

Beyond timeliness, effective communication fosters trust and a sense of shared goals within project teams (Akinci et al., 2006). This, in turn, can lead to increased innovation and problem-solving capabilities (Silberstein et al., 2010). Poor communication, on the other hand, can lead to a fragmented work environment where teams work in silos, hindering project efficiency (Fellowes et al., 2003).

While the importance of communication in construction is well-established, a gap exists in understanding how communication styles and practices impact project timelines in specific industry segments like hollow metal and wooden door companies. Traditional communication methods (phone calls, emails) may not be optimal in today's fast-paced construction environment, potentially leading to delays.

The construction industry is increasingly adopting modern communication tools like instant messaging platforms and project management software. However, research on the effectiveness of these tools in specific contexts like hollow metal and wooden door companies remains limited (Baccarini, 1999; Moeini et al., 2016).

Limited research explores the role of communication leadership and cultural factors in shaping communication practices within construction teams, particularly in niche sectors (Sahlin-Andersson & Söderlund, 2012). Understanding these dynamics is crucial for developing targeted communication strategies.

1.2. Research Problem:

While the significance of communication in construction is well-established, a gap exists in understanding how communication styles and practices impact project timelines in hollow metal and wooden door companies. Traditional communication methods (phone calls, emails) may not be optimal in today's fast-paced construction environment, potentially leading to delays.

Despite the growing body of research on communication in construction, there are two key gaps in our understanding:

1.2.1. Theoretical Gaps:

While the link between communication and project success is established, limited research explores how different communication styles and practices impact project timelines in specific industry segments. Traditional communication methods may not be optimal in today's fast-paced construction environment. Modern communication tools like instant messaging platforms and project management software could offer advantages, but their effectiveness in this specific context remains unexplored (Baccarini, 1999; Moeini et al., 2016). Furthermore, research on the role of communication leadership and cultural factors in shaping communication practices within construction teams is limited (Sahlin-Andersson & Söderlund, 2012).

1.2.2. Practical Gaps:

Existing research primarily focuses on general construction projects. There's a lack of studies examining communication patterns and their influence on project timelines in hollow metal and wooden door companies. These companies operate in a niche market with unique project requirements and communication dynamics. Understanding these dynamics is crucial for developing targeted communication strategies to improve project efficiency. For instance, the need for precise technical specifications and clear coordination between design and installation teams might necessitate a more nuanced communication approach compared to larger-scale building projects.

1.3. Research Significance

By understanding how communication impacts project timelines in hollow metal and wooden door companies, we can develop improved communication strategies. This, in turn, can benefit construction companies by:

- Reducing project delays and associated costs (Love et al., 2002).
- Enhancing project quality and customer satisfaction (Akintola et al., 2017).
- Fostering a collaborative work environment, leading to increased innovation and problem-solving (Akinci et al., 2006).
- Building trust and a sense of shared goals within project teams (Zwikael & Auer, 2019).

The findings of this research can be valuable to construction companies in Edmonton and beyond, providing practical recommendations for optimizing communication practices to achieve on-time project delivery.

1.3.1. At the theoretical level

This research contributes to the existing body of knowledge on communication in construction projects by focusing on a specific and under-researched industry segment - hollow metal and wooden door companies. By examining their communication practices and their impact on project timelines, the research can shed light on communication patterns unique to this industry. The findings can contribute to a theoretical framework for understanding how communication styles and practices influence project delivery efficiency in niche construction sectors.

1.3.2. At the practical level

The practical implications of this research are significant. By identifying communication gaps and proposing improved communication strategies tailored to the specific needs of hollow metal and wooden door companies, the project can help companies in Edmonton achieve timelier project delivery, leading to cost savings and increased customer satisfaction. Additionally, the findings can be applicable to similar companies in other locations, providing valuable insights for broader industry improvement. This research can inform the development of best practices for communication within niche construction sectors, ultimately contributing to improved project performance across the entire industry (Moeini et al., 2016).

1.4. Research Questions

What is The Impact of Team Communication on Project Timelines?

To address the question, this study proposes the following Sub Questions

RQ1: How do the dimensions of communication (frequency, clarity, timeliness) influence project timelines in hollow metal and wooden door companies?

- **RQ1.1:** How does the frequency of communication between project stakeholders (e.g., design team, procurement, installation) impact project timelines in hollow metal and wooden door companies?
 - Does daily communication lead to fewer delays compared to weekly communication? (Ahn et al., 2013)
 - Are there specific project stages where increased communication frequency is most beneficial? (Love et al., 2017)
- **RQ1.2:** How does the clarity of communication (e.g., use of precise language, detailed drawings) affect project timelines in hollow metal and wooden door companies?
 - Do clearly defined project specifications reduce the need for rework and improve adherence to timelines? (Toole, 2005)
 - How does the use of visual aids (drawings, mockups) impact clarity and reduce misinterpretations? (Song et al., 2009)
- **RQ1.3:** How does the timeliness of information exchange (e.g., immediate response to inquiries, prompt issue escalation) influence project timelines in hollow metal and wooden door companies?
 - Does prompt resolution of communication delays (e.g., unanswered emails) minimize schedule disruptions? (Ahn et al., 2013)

- How does the use of real-time communication tools (instant messaging) affect the speed of information exchange and decision-making? (Song et al., 2009)

Sub-questions for Research Question 2:

RQ2: How does the level of team communication (collaboration, information sharing) impact the application of project timelines in hollow metal and wooden door companies?

- **RQ2.1: Collaborative Communication Practices**

- How do collaborative communication practices (e.g., regular team meetings, joint problem-solving) influence adherence to project timelines? (Ahn et al., 2013)
- How does fostering a culture of open communication within teams affect information sharing and proactive problem-solving? (Love et al., 2017)

- **RQ2.2: How does the effectiveness of information sharing (e.g., clear documentation, accessibility of project information) impact the application of project timelines in hollow metal and wooden door companies?**

- Does a centralized repository for project documents (drawings, specifications) improve access to information and reduce delays? (Toole, 2005)
- How does the use of standardized communication protocols (reporting formats, meeting agendas) ensure consistent information flow and project timeline visibility? (Baccarini, 1999)

These sub-questions delve deeper into the main research questions by focusing on specific aspects of communication practices and their impact on project timelines in hollow metal and wooden door companies. They encourage exploration through "how" and "what" questions, providing a framework for gathering data and analyzing its influence on project delivery efficiency.

1.5. Research Objectives

Research Objectives

This research aims to investigate the impact of communication practices on project timelines in hollow metal and wooden door companies in Edmonton, Alberta. The specific objectives are:

Objective 1: Analyze the influence of communication dimensions on project timelines.

- This objective aligns with research question 1 and focuses on the specific aspects of communication that affect project timelines.
- It will be achieved by measuring the frequency, clarity, and timeliness of communication within project teams and analyzing their correlation with project delivery times. (Toole, 2005)

Objective 2: Evaluate the effectiveness of team communication practices in managing project timelines.

- This objective aligns with research question 2 and explores how collaborative communication contributes to on-time project delivery.
- It will be achieved by assessing information sharing practices, team collaboration methods, and the use of project timelines as a collaborative tool. The research will then evaluate how these practices influence adherence to project schedules. (Ahn et al., 2013)

These objectives are **SMART** because they are:

- **Specific:** They clearly define the areas of investigation (communication dimensions and team communication practices).
- **Measurable:** The research will involve data collection through surveys, interviews, or project documentation analysis, allowing for quantitative or qualitative assessment of communication practices and their impact on timelines.
- **Attainable:** The research focuses on a specific industry segment (hollow metal and wooden door companies) in a defined location (Edmonton) with achievable data collection methods.
- **Relevant:** The objectives directly address the research problem and proposed research questions, aiming to understand how communication impacts project timelines in this unique context.
- **Time-bound:** The completion of these objectives will contribute to the overall research project, which is expected to be conducted within a reasonable timeframe.

1.6. Research Hypotheses

Based on the research questions and sub-questions, here are some directional hypotheses focusing on the predicted relationships between communication practices and project timelines in Trimtech Industries:

Research Question 1: How do the dimensions of communication (frequency, clarity, timeliness) influence project timelines in hollow metal and wooden door companies?

Hypothesis 1.1 (Frequency): Project teams at Trimtech Industries with more frequent communication between design teams, procurement specialists, and installers will experience shorter project timelines compared to projects with less frequent communication. (This aligns with research suggesting timely information exchange reduces errors and delays.)

Hypothesis 1.2 (Clarity): Projects at Trimtech Industries with clearer communication (well-defined messages, detailed drawings) will have fewer delays due to misunderstandings compared to projects with unclear communication. (This builds on the understanding that clear communication reduces rework and ensures tasks are completed as planned.)

Hypothesis 1.3 (Timeliness): Projects at Trimtech Industries with more timely communication (prompt responses, immediate issue escalation) will have fewer schedule disruptions compared to projects with communication delays. (This is based on the idea that faster information exchange allows for quicker decision-making and problem resolution.)

Research Question 2: How does the level of team communication (collaboration, information sharing) impact the application of project timelines in hollow metal and wooden door companies?

Sub-question 2.1: Collaborative Communication Practices

Hypothesis 2.1.1: Project teams at Trimtech Industries that engage in more collaborative communication practices (regular meetings, joint problem-solving) will demonstrate greater adherence to project timelines compared to teams with less collaboration. (This aligns with research suggesting collaborative communication fosters trust, innovation, and proactive problem-solving, leading to smoother project execution.)

Hypothesis 2.1.2: A culture of open communication within project teams at Trimtech Industries will lead to improved information sharing and fewer schedule deviations compared to teams with limited open communication. (This builds on the understanding that open communication allows for early identification and resolution of issues, preventing delays.)

Sub-question 2.2: Information Sharing Effectiveness

Hypothesis 2.2.1: A centralized repository for project documents (drawings, specifications) at Trimtech Industries will improve access to information and reduce delays compared to projects with scattered or inaccessible documents. (This aligns with research suggesting easy access to information reduces rework and ensures everyone is working with the latest information.)

Hypothesis 2.2.2: The use of standardized communication protocols (reporting formats, meeting agendas) at Trimtech Industries will ensure consistent information flow and better visibility of project timelines compared to projects with inconsistent communication methods. (This builds on the understanding that

standardized protocols promote clarity and reduce confusion, leading to more efficient project execution.)

These hypotheses are all directional, stating a predicted relationship between specific communication practices and project timelines. They are also grounded in existing research on communication in construction projects and tailored to the context of hollow metal and wooden door companies.

1.7. Research Model

Hollow Metal & Wooden Door Companies

Independent Variables (Communication Practices):

- Frequency of Communication (High ↔ Low)
- Clarity of Communication (High ↔ Low)
- Timeliness of Communication (High ↔ Low)
- Team Collaboration (High ↔ Low)
- Information Sharing (High ↔ Low)
- Collaborative Use of Project Timelines (High ↔ Low)

Dependent Variable (Project Outcome):

- Project Timeline Adherence (High ↔ Low)

Moderating Variables (Potential Influences):

- Project Complexity (Simple ↔ Complex)
- Company Culture (Open ↔ Closed)
- Communication Technology Use (Extensive ↔ Limited)

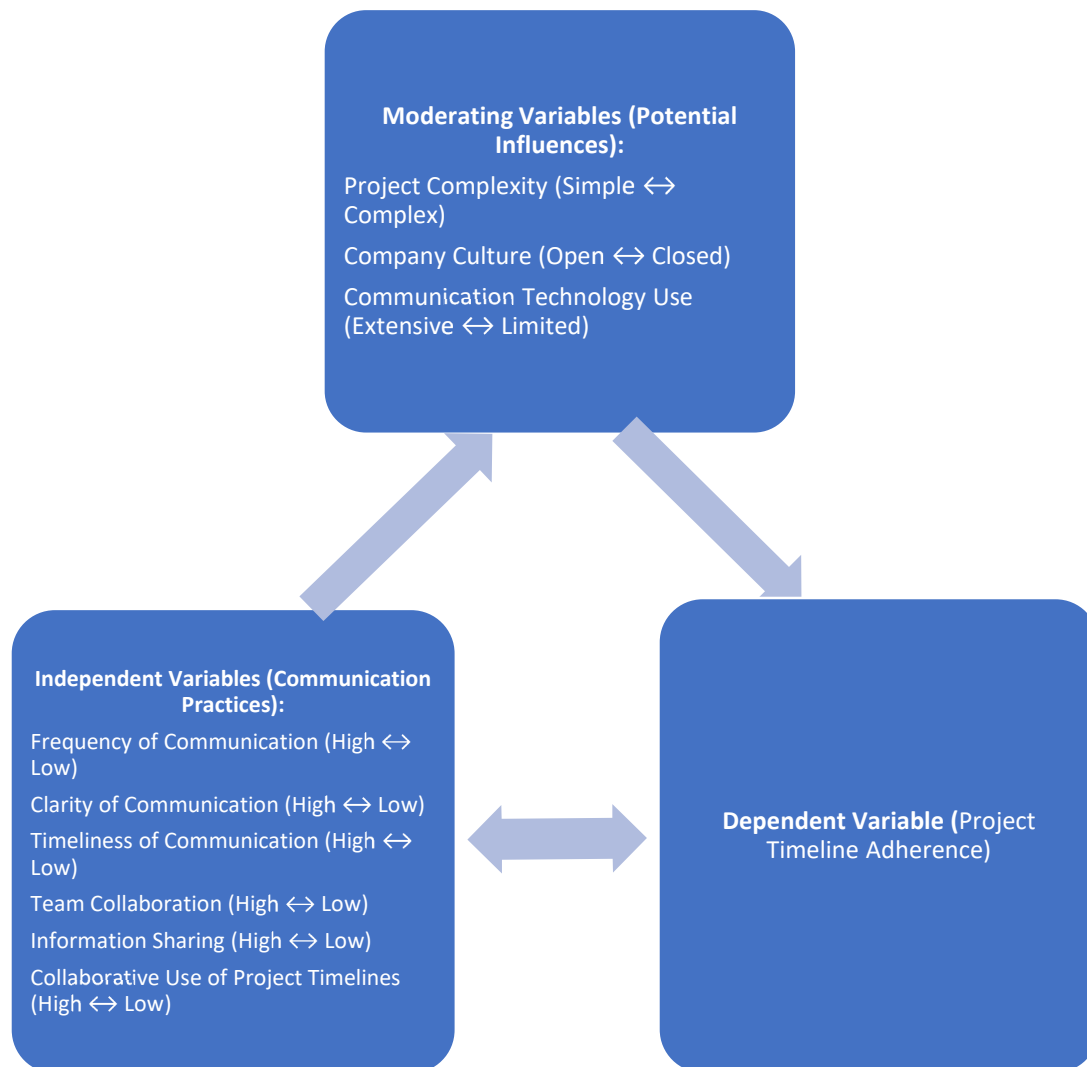
The model proposes the following relationships:

- Improved communication practices (higher frequency, clarity, timeliness, collaboration, information sharing, and collaborative use of timelines) will lead to better adherence to project timelines (indicated by arrows pointing upwards).

- The impact of communication practices on timelines may be influenced by project complexity, company culture, and communication technology use (represented by moderating variables).

Visual Representation:

This model is a simplified representation of the complex relationship between communication and project timelines. The actual influence may be more nuanced and depend on the specific context of each project.



1.8. Research Methodology

Research Philosophy

- **Positivist:** This research adopts a positivist approach, emphasizing objective reality and the use of scientific methods to uncover generalizable knowledge about the impact of team communication on project timelines.

Research Approach

- **Deductive:** The research will follow a deductive approach, applying existing theories about communication in construction projects to a specific case - hollow metal and wooden door companies. Hypotheses will be developed based on these theories and tested through data collection.

Research Choice

- **Quantitative:** A quantitative research approach will be used, relying on surveys and statistical analysis to measure the relationships between communication dimensions, team communication, and project timelines.

Time Horizon

- **Cross-sectional:** The research will collect data at a single point in time to examine the current state of communication practices and their impact on project timelines.

Data Collection and Analysis Techniques

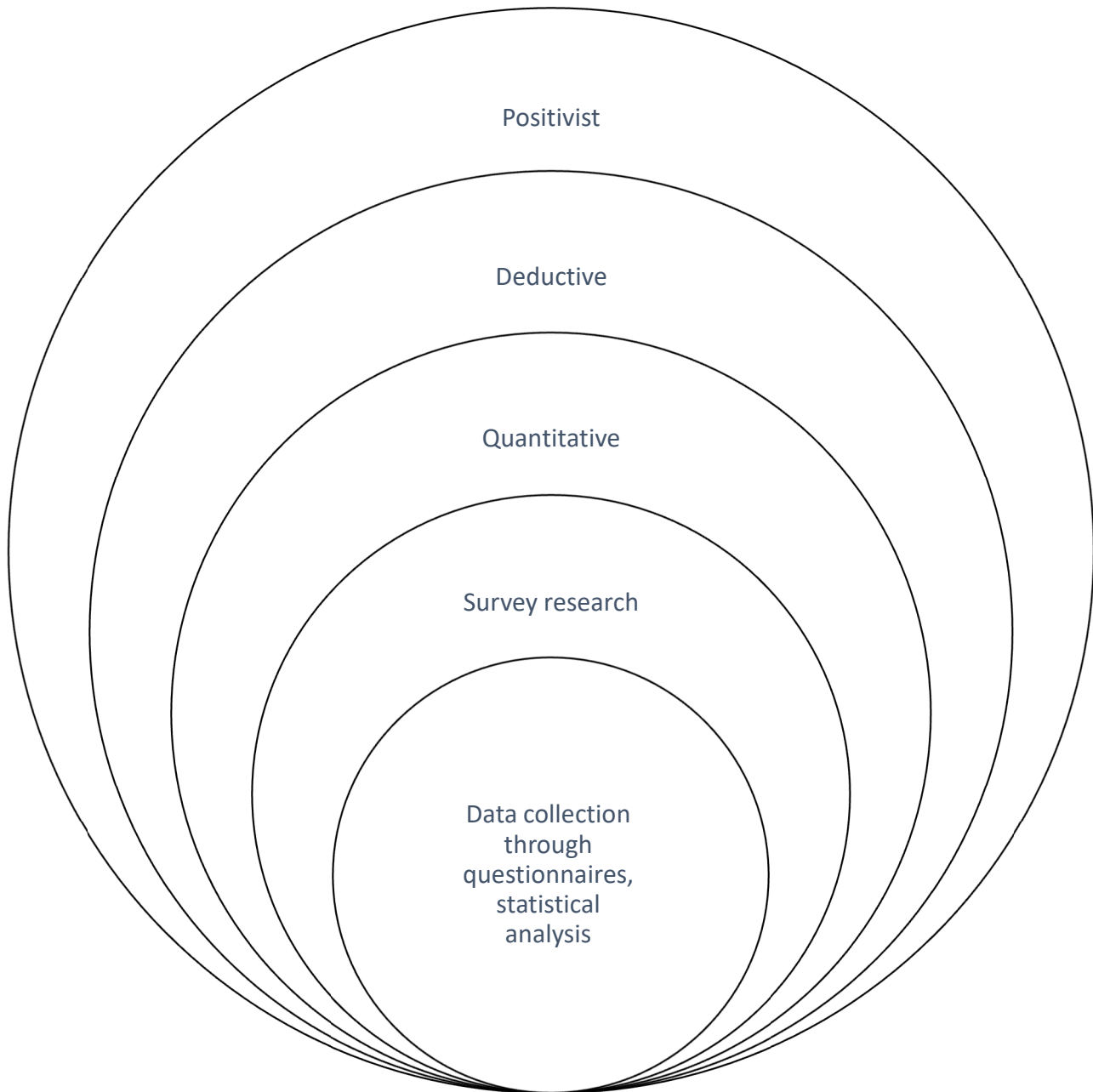
- **Survey:** A structured survey will be developed to gather data from employees at Trimtech Industries Doors and Hardware Company. The survey will measure communication dimensions (frequency, clarity, timeliness), team communication (collaboration, information sharing), and project timelines.
- **Statistical Analysis:** Statistical software will be used to analyze the survey data. This may include descriptive statistics, correlation analysis, and potentially regression analysis to explore the relationships between the variables.
- **Research Philosophy:** Positivist (Reality is objective and independent of the observer)
- **Epistemological Position:** Deductive (Knowledge is gained through testing hypotheses derived from theories)
- **Methodological Strategies:** Quantitative (Focuses on numerical data and statistical analysis)
- **Methods:** Survey research
- **Techniques:** Data collection through questionnaires, statistical analysis
- **Reflexivity:** The researcher will acknowledge their own potential biases and how they might influence the research design and interpretation of findings.

Note: The research onion is a visual representation of the different layers involved in making research decisions.

Additional Considerations

- **Sampling:** A representative sample of employees from Trimtech Industries will be selected to participate in the survey.

- **Ethical Considerations:** Informed consent will be obtained from participants, and data confidentiality will be maintained throughout the research process.



1.9. Scope of The Study

Empirical Study: Impact of Team Communication on Project Timelines in Trimtech Industries

Trimtech Industries Inc. is a Doors and hardware company in Edmonton, Alberta, Canada that specializes in doors and hardware. They have been in business for over 30 years and have a good reputation with the Better Business Bureau. And also, a part of the City of Edmonton's initiative, "Edmonton Made"

Caters to various construction needs, potentially offering design and engineering services in addition to product sales

Research Variables:

- **Independent Variables (Communication Practices):**
 - **Frequency of Communication (High ↔ Low)** - How often project stakeholders (design teams, procurement specialists, installers) communicate with each other. This could be measured by tracking the number of meetings, emails, phone calls, or instant messages exchanged per week/month.
 - **Clarity of Communication (High ↔ Low)** - How clear and well-understood are the messages exchanged between project stakeholders. This could be assessed through surveys or interviews with project team members, gauging their perception of message clarity.
 - **Timeliness of Communication (High ↔ Low)** - How promptly project stakeholders respond to inquiries and information requests. This could

be measured by tracking response times to emails, phone calls, or messages.

- **Team Collaboration (High ↔ Low)** - The level of teamwork and cooperation exhibited by project team members. This could be evaluated through surveys or observations of team interactions, assessing factors like information sharing, joint problem-solving, and a sense of shared goals.
- **Information Sharing (High ↔ Low)** - How effectively project information is shared within the team. This could be measured by tracking the use of shared project management platforms, document repositories, and the overall transparency of information **flow**.
- **Collaborative Use of Project Timelines (High ↔ Low)** - How effectively project timelines are used as a collaborative tool for planning, monitoring, and problem-solving within the team. This could be assessed through surveys or interviews with project team members, gauging their perception of the usefulness and integration of project timelines in their communication practices.
- **Dependent Variable (Project Outcome):**

Project Timeline Adherence (High ↔ Low) - How well the project stays on schedule as defined by the initial project timeline. This could be measured by tracking deviations from the planned timeline milestones and calculating metrics like Schedule Performance Index (SPI).

Data Collection Methods:

- **Surveys:** Questionnaires will be distributed to project team members at Trimtech Industries to gather data on their communication practices, team dynamics, and perceptions of project timeline adherence.
- **Interviews:** Semi-structured interviews will be conducted with key personnel involved in project delivery at Trimtech Industries, including project managers, design team representatives, procurement specialists, and installers. This will provide deeper insights into communication challenges and successful communication strategies.
- **Document Analysis:** Project documents, such as meeting minutes, communication logs, and project schedules, will be reviewed to analyze communication frequency, clarity, timeliness, and the use of project timelines.

Data Analysis:

Statistical analysis will be performed on survey data to identify correlations between communication practices and project timeline adherence.

Thematic analysis will be conducted on interview transcripts to identify recurring themes and patterns related to communication challenges and successful communication strategies.

Data from document analysis will be used to corroborate survey and interview findings and provide a more comprehensive picture of communication practices at Trimtech Industries.

Expected Outcomes:

The study aims to identify the impact of various communication practices on project timeline adherence in a hollow metal and wooden door company setting. The findings are expected to:

- Reveal how communication frequency, clarity, timeliness, collaboration, information sharing, and collaborative use of project timelines influence project delivery schedules at Trimtech Industries.
- Provide insights into communication challenges specific to the hollow metal and wooden door industry.
- Inform recommendations for improved communication strategies that can enhance project efficiency and on-time delivery at Trimtech Industries and similar companies.

Reference:

- **Trimtech Industries Doors and Hardware Company**
(<https://www.trimtechindustries.ca/>)

1.10. The Suggested Project Structure

Chapter 1: Introduction

Chapter 2: Literature Review

Chapter 3: Research Methodology

Chapter 4: Statistical Analysis

Chapter 5: Findings` Discussion and Conclusion

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