



VAASAN AMMATTIKORKEAKOULU  
UNIVERSITY OF APPLIED SCIENCES

Vesa Siirilä

THE RELEVANCE OF TRUST,  
COMMUNICATION AND ROLE CLARITY TO  
PROJECT PERFORMANCE

Case organization City of Vaasa's Urban Environment Sector

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## TIIVISTELMÄ

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Tämän opinnäytetyön tarkoituksena oli tutkia kommunikaation ja luottamuksen välistä suhdetta sekä niiden vaikutusta projektien suorituskykyyn Vaasan kaupungin kaupunkiympäristön toimialalla. Lisäksi opinnäytetyön tarkoituksena oli selvittää roolien selkeyttä kohdeorganisaation projektityössä. Tutkimuksen tarkoituksena oli myös selvittää roolien selkeyden merkitystä moderoivana muuttujana luottamuksen ja projektin suorituskyvyn välisessä suhteessa.

Opinnäytetyön kirjallisuuskatsaus tarjoaa yleiskuvan perinteiseen ja moderniin projektitoimintaan sekä syvemmän katsauksen opinnäytetyön kannalta keskeisiin osa-alueisiin: kommunikaatioon, luottamukseen, roolien selkeyteen projektitoiminnassa ja projektin suorituskykyyn. Projektin suorituskyvyn mittaamiseen liittyen kirjallisuuskatsauksessa pohditaan, minkälainen on onnistunut projekti ja miten projektin onnistumista voidaan mitata.

Tutkimusmenetelmänä käytettiin määrällistä tutkimusta. Kyselytutkimus toteutettiin internet-pohjaisena. Tilastolliset analyysit tehtiin käyttäen IBM SPSS- ja IBM SPSS Amos -tilastojenkäsittelyohjelmistoja.

Tulokset osoittivat, että erityisesti kommunikaatiolla on tärkeä rooli tuloksellisessa projektitoiminnassa. Kyselyn pohjalta kerätty tutkimusaineisto vahvisti roolien selkeyden ominaisuuden moderoivana muuttujana vertikaalisen luottamuksen ja projektin suorituskyvyn välisessä suhteessa.

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Avainsanat: Projektinhallinta, kommunikaatio, luottamus, roolien selkeys, projektin suorituskyky, projektin onnistumisen kriteerit ja projektinhallinta julkisella sektorilla

## ABSTRACT

Author	Vesa Siirilä
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The main goal of this thesis was to examine the relationship between project communication and trust, and their effect on project performance in the City of Vaasa's Urban Environmental Sector. Additionally, the thesis explored the current state of role clarity in project work within the case organization, examining whether role clarity moderates the relationship between trust and project performance.

The literature review provides a general overview of project management and project management practices, including a more in-depth view of key topics relevant to this thesis: project communication, trust, project performance, project success, and role clarity. As a foundation for the measures related to project performance used in the survey, the literature review in the thesis also examined what constitutes a successful project and how its success can be measured.

The research method used was a quantitative study. The data consisted of 86 responses collected via a web-based questionnaire. Statistical analyses were performed using IBM SPSS and IBM SPSS AMOS software.

The results showed that communication and trust play a key role in productive project management. The moderating role of role clarity in the relationship between trust and project performance was confirmed for vertical trust but not for horizontal trust.

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Keywords: Project management, communication, trust, role clarity, project performance, project success criteria, and project management in public sector

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## 1 INTRODUCTION

Today's project management has come a long way from the beginning of the project management tradition. Possibly the most recognized expert in the field of project management, Harold Kerzner (2015, p. 1) sums up the history of project management as follows: "Project management had its roots in the aerospace, defense, and construction industries more than 50 years ago. Project management practices were effective on large projects with reasonably known and predictable technology, assumptions, and constraints that were unlikely to change over the duration of the project and a somewhat stable political environment."

"Today, project management approach is being applied to a wider variety of projects encompassing all areas of business where politics, risk, value, company image and reputation, goodwill, sustainability, and quality are seen as being potentially more important to the firm than the traditional time, cost, and scope constraints."(Kerzner, 2015, p. 1)

As such, the traditional project management practices that have been used for decades are now seen as ineffective for managing some of these new types of projects. Kerzner (2015, p. 4) considers that the current version of project management as an entity is traditional project management concept added with distributed collaboration. Distributed collaboration is based on open communication.

Traditional project management favored hierarchical decision making and formalized reporting, whereas more modern practices highlight the need for access to information by the entire project team, including the stakeholders and those who sit on the project governance committee (Kerzner, 2015, p. 4).

After working, researching and shaping the field of project management over five decades, Dr. Kerzner have observed that project management excellence comes from four critical components (Kerzner, 2019, Introduction p. 14):

- Effective communications

- Effective cooperation
- Effective teamwork
- Trust

### **1.1 Research Objectives**

This thesis explores the current state of trust and communication in project work carried out by the City of Vaasa's Urban Environmental Sector. The primary research objective of this study was to determine the impact of trust and communication on project performance within the project work conducted by the City of Vaasa's Urban Environmental Sector. The thesis analyzes the relationship between project communication, trust, and project success/performance, and examines whether role clarity moderates the relationship between trust and project performance. Additionally, the thesis aims to shed light on the complex concept of measuring project value in the public sector.

### **1.2 Research Questions**

The research questions in this thesis are:

RQ1. How do trust and communication affect project performance in the City of Vaasa's Urban Environmental Sector?

RQ2. What is the level of role clarity in projects within the City of Vaasa's Urban Environmental Sector?

## 2 LITERATURE REVIEW

The literature review provides insights into key topics relevant to this thesis: project communication, trust, project performance, and role clarity. These topics also lay the ground for the thesis's hypotheses. Additionally, given that the project management practices at the case organization, the City of Vaasa's Urban Environment sector, are not yet mature, the literature review offers a general overview of the project management and project management practices. The review also discusses criteria for project success and addresses how factors contributing to a project's success may differ from those affecting project performance.

### 2.1 Defining a project

A Project can be defined as a problem scheduled for solution (Stephens and Juran, 2004). Dr. Kerzner (2015, p. 55) defines project as follows: "A set of values scheduled for sustainable realization."

Building upon previous discussions, Joseph Heagney (2016) quotes Dr. J. M. Juran noting that every project is conducted to solve some kind of problem.

Heagney elaborates that the word "problem" is often interpreted as something negative, though projects deal with both positive and negative kinds of problems. For example, developing a new product represents a positive problem, while an environmental cleanup project addresses a negative kind of problem.

Jeffrey Pinto (1996) summarizes the following list, showing how most writers on project management identify four common characteristics when defining a project:

- They are constrained by a finite budget and time frame; that is, they typically have a specific budget allocated and a defined start and finish date. Further, their budgets often represent a significant portion of the resources of the performing organization.

- They comprise a set of complex and interrelated activities performed by diverse resources or organizational members that require coordination.
- They are directed toward the attainment of a clearly defined objective or set of objectives which, when achieved, mark the end of the project and the dissolution of this project team.
- To some degree, each project is unique.

Projects are undertaken to create value for stakeholders. PMI (Project Management Institute) describes the principles of stakeholders as follows: “Stakeholders may come and go throughout the life cycle of the project. Additionally, the degree of a stakeholder's interest, influence, or impact may change over time. Stakeholders, especially those with a high degree of influence and who have an unfavorable or neutral view about a project, need to be effectively engaged so that their interests, concerns, and rights are understood. The project team can then address these concerns through effective engagement and support leading to the probability of a successful project outcome. Identifying, analyzing, and proactively engaging with stakeholders from the start to the end of the project helps to enable success.” (PMBOK Guide, 2021).

## **2.2 What is Project Management?**

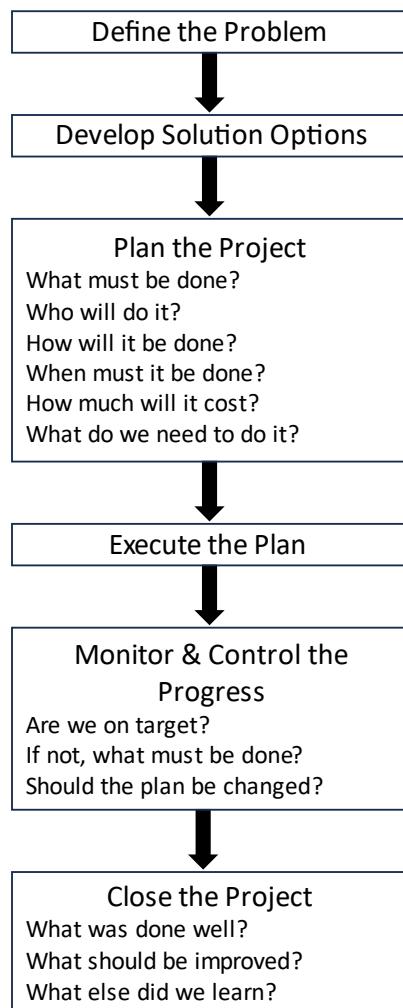
In addressing the question, “What makes a good project manager?” Bredillet et al. (2015) distance themselves from the typical performance and competence-oriented methods of defining a good project manager. They state: “A good project manager is a “wise” project manager, who acts “rightly” or performs “good” actions in context”.

Project management is the application of knowledge, skills, tools, and techniques to project activities to achieve project requirements. Project management is accomplished through the application and integration of the project management processes of initiating, planning, executing, monitoring and controlling, and closing (PMBOK Guide, 2017).

Project teams are a group of stakeholders. This group of stakeholders engages other stakeholders to understand, consider, communicate, and respond to their interests, needs, and opinions (PMBOK Guide, 2021).

While project management has been practiced informally throughout human history, it emerged as a distinct profession in the mid-20th century when visionaries from different industries recognized the need for new tools in a rapidly changing world. Established in 1969, the Project Management Institute is known for its widely adopted project management methodology. Their methodology is known as Project Management Body of Knowledge (PMBOK). Essentially, project management focuses on managing the project lifecycle effectively (Heagney, 2016; PMI, 2023).

Each aspect of a project goes through phases of initiation, planning, and execution before reaching its goal, forming the project management lifecycle. One example of project management lifecycle steps is presented in Figure 1 (Heagney, 2016):



**Figure 1.** The steps in managing a project (Heagney, 2016)

In evaluating the impact of project management on a specific organization, Mohammadian (2019) has recognized three direct influences that determine whether the value of project management is actually being realized:

- 1) Assessment how well the implemented project management approach aligns with the organization's business orientation, environment, and project types.
- 2) Evaluation of the impact of the implemented framework on project delivery efficiency, effectiveness, and reliability, as well as its influence on market focus and service differentiation.

- 3) Assessment of the tangible business outcomes from the implemented project management capabilities, such as cost reduction, optimized efficiency, increased revenue, and the organization's return on investment.

### **2.3 Project Management in Public Sector**

The importance of project and program management capability in the public sector has been recognized in government initiatives in various countries in most cases associated with increasing public scrutiny and a need for assurance of value from public expenditure (Crawford and Helm, 2009).

Even though project management was originally founded and developed in public organizations, as a field of study, project management in the public sector is far from mature. According to Wirick, (Wirick, 2009 in Gomes et al., 2018) there is a general tendency to avoid the context of public organizations in project management research, and public sector project management is among the least researched areas within the field of project management.

Public organizations tend to be more traditional in their course of action compared to other sectors. This seems to be true in terms of adopting the latest knowledge in project management, and some of this can be attributed to a more regulated operational environment (Gasik, 2016). As Roger C. Cramton is quoted in Beckett and Koenig, (2005): "Every bureaucracy develops its own way of looking at things and these belief patterns are enormously resistant to change. In time an agency acquires a tunnel vision in which particular values are advanced and others are ignored."

When discussing the organizational structure in the public sector, the concept of "organizational silos" is frequently brought up. A public organization silo refers to a situation within a public sector organization where different departments or units operate in isolation from one another, for example, in terms of budgeting

and line of authority. Literature supports previously mentioned general perception adding that silo-dominant administrative systems often fail to coordinate their operations horizontally due to strictly vertical power structure that maximizes vertical coordination at the expense of horizontal coordination (Scott and Gong, 2021).

Public organizations are often considered more bureaucratic than private and bureaucratic leadership has been identified as a method that does not promote trust nor communication thereby increasing risk of poor project performance (Ohe-meng et al., 2019).

Public projects more frequently impact the surrounding society, and project management in the public sector is generally considered a more complex environment than other sectors, particularly due to the increased challenges in stakeholder management that sets it apart from other industries. The number of stakeholders is often large, and different stakeholders often have a variety of expectations that are inconsistent with each other. Public projects have often a fundamental difference regarding stakeholder expectations about project costs: stakeholders most affected by the project outcome are not necessarily the ones investing money or resources to project, and as a result, their interest in competitive project costs may be completely irrelevant (Gasik, 2016).

As previously mentioned, stakeholder communication is a key success factor in public projects. The degree of difficulty is heightened by the fact that the majority of stakeholders may not be familiar with the fundamentals of the project in question and might not understand the project-specific terms used in communication, leading to knowledge barriers. It is important to note that the primary cause of this issue can also root from the core project organization if the level of project management maturity is very low (Kerzner, 2019; Zwikael et al., 2022).



Transparency is one of the fundamental characteristics of public institutions, so project managers must pay particular attention to the form and content of communication. One of the reasons for which so much importance should be attached to communication management is its auxiliary role of stakeholder management. The relatively high complexity of communications can be understood as added precision to ensure the success of stakeholder management, and thereby the success of the project. (Gasik, 2016).

For the future of project management in the public sector, Eskerod and Huemann (2013) propose that the societal demand to incorporate sustainable development into the context of projects introduces new challenges for project stakeholder management. This is particularly true in terms of supporting underpinning values like transparency and traceability, fairness, trust, and participation. The same study suggests that combining two approaches, namely management-of-stakeholders and management-for-stakeholders, is crucial for project management to address the need for incorporating more sustainable development considerations.

#### **2.4 Project Performance**

Project performance is often defined through project scope. Two aspects of scope are to be considered: product scope and project scope. Product scope refers to intended features of final product or other desired deliverables of project. Product performance is how customers and/or stakeholders find the project outcome matching pre-defined expectations. The primary purpose of defining the project scope is to ensure that the team, as well as other resources such as time and money, are committed and focused on executing the project. Project performance measures how well execution is carried out against expectations stated in project scope (Stewart and Stewart, 2010, p. 23). When addressing performance, this thesis focuses on project performance not to be confused with product performance.

This paragraph contains a summary of how Kerzner (2015, pp. 174, 110, 84) assesses the use of metrics in project management in his book "Project Management

2.0: Leveraging Tools, Distributed Collaboration, and Metrics for Project Success.” Metrics are necessary to measure project performance in a quantifiable manner. More metrics does not necessarily mean better measuring. It is essential to find metrics that are suited to the specific project and that measure the correct parameters. Without appropriate project performance metrics, it is difficult make decisions as output of project control and monitoring. Metrics are used to keep stakeholders informed of the current status of the project. In project performance context, term metric is more generic while indicators are more specific. Most important indicators are commonly called Key Performance Indicators (KPI) that are critical metrics that focus on the most important aspects of a project or organizational goals. Defining the correct metrics or KPIs are joint ventures between the project manager, client, and stakeholders and are a necessity in order to get stakeholder agreement.

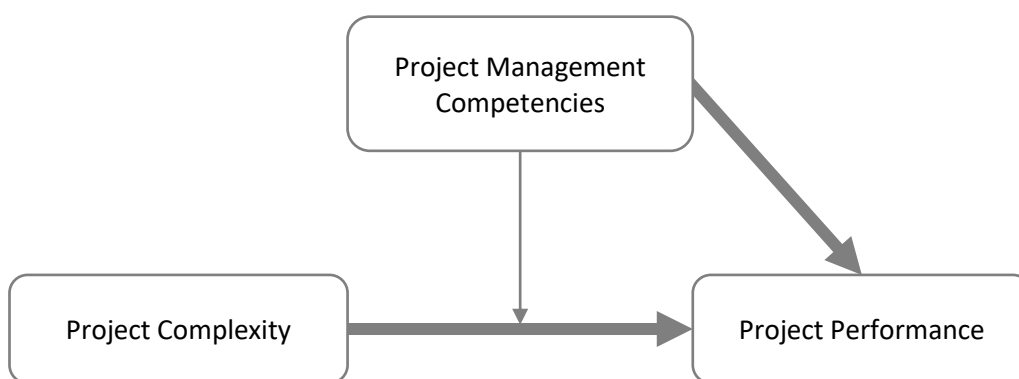
In traditional project management, metrics were often the same from one project to another and remained unchanged throughout the entire project lifecycle. The driver for this was seen as better comparability between different projects. More modern approach is that project based metrics can change not only from project to another but also during ongoing project depending on project phase and as a response for changes in project environment (Kerzner, 2017, pp. 87–88). Complex projects are more likely to have more metrics and KPIs and more need for readjusting metrics and KPIs during project (Kerzner, 2017, pp. 6–7).

PMBOK (2021) recognizes eight key areas, performance domains that are critical for the effective delivery of project outcome. Together domains form a unity where each performance domain can affect each other and/or project outcome. Eight key areas according PMBOK Guide are:

- Stakeholders
- Team
- Development Approach and Life Cycle
- Planning

- Project Work
- Delivery
- Measurement
- Uncertainty

A study by Khattak and Mustafa (2019) addresses the requirements for competencies needed to cope with complex projects. High project performance in complex projects is often result of combination of wide-ranging competency in behavioral and natural sciences as illustrated in conceptual model below.



**Figure 2.** Illustration of relationships among project management competencies, complexities and project performance. (Khattak and Mustafa, 2019).

## 2.5 Project Success Criteria

One of the most common challenges in project management is determining whether or not a project is successful (PMBOK Guide, 2017).

In traditional project management, the definition of success mostly relied on whether predefined expectations of cost and time were achieved. Success was defined as completing project within constraints of time cost and scope (Atkinson, 1999; Kerzner, 2015; PMBOK Guide, 2017). From history to the present day, there are examples showing that project management often focuses on the delivery stage and the most easily measurable metrics, such as time and money, to prove

that a project has been done correctly. However, this approach sometimes neglects to consider the value provided to stakeholders or sponsors. One can easily ask if this is best way to produce value for stakeholders (Atkinson, 1999).

In modern project management, especially in long-term projects, it is not uncommon for the final success criteria to differ from those established at the beginning of the project (Kerzner, 2015). Success criteria corresponds to the dimensions (or measures) on which the success of the project is judged whereas success factors are key variables that explain the success of the project (Diallo and Thuillier, 2005).

The prevailing perception is that lot of effort should be put in negotiating and communicating about project success criteria with stakeholders before project execution (Kerzner, 2015; PMBOK Guide, 2017). PMBOK Guide states three questions that key stakeholders and project manager should agree on:

- What does success look like for this project?
- How will success be measured?
- What factors may impact success?

Every project cannot be successful. Companies that have a very high degree of project success probably are not working on enough projects and certainly are not taking on very much risk. According to Dr. Kerzner (2017, p. 69, 2014, p. 289) these types of companies eventually become followers rather than leaders. For companies that desire to be leaders, knowledge on how to turn around a failing or troubled project is essential.

Pinto et al. assert (2009) that a project outcome cannot be considered successful if it fails to satisfy stakeholder expectations.

In order to assess whether a project is successful, Zwikael and Smyrk (2012) propose a “triple-test” framework, that incorporates three distinct perspectives, allowing for evaluations of project performance to be conducted at different, independent levels. (Table 1.)

**Table 1.** The triple-test performance measurement framework for project success (Zwikael and Smyrk, 2012).

<b>Level of test</b>	<b>Project management success</b>	<b>Project ownership success</b>	<b>Project investment success</b>
Who judges?	Project owner	Project funder	Project funder
Who is being evaluated?	Project manager	Project owner	The investment
What is judged?	Achievement of the project plan	Realization of the business case	The effective “return” on the investment in the project (in the form of desirable outcomes)
Relevant criteria	1. Time 2. Cost 3. Scope/quality 4. Detrimental outcomes	Achievement of the approved business case	Acceptability of the realized business case

## 2.6 Project Value

In the modern approach of project management, projects and project management concepts promote creating value for project stakeholders. Measuring project value is not simple. Lepak et al. (2007) state that “Value creation is a central concept in the management and organization literature for both microlevel (individual, group) and macrolevel (organization theory, strategic management) research. Yet there is little consensus on what value creation is or on how it can be achieved”. In order to better address the problem Lepak et al divides value creation into two separate concepts: what is value and how value is created. The study also presents a comprehensive table on the different dimensions of value creation in project management. (Table 2.)

**Table 2.** Different dimensions of value creation (Lepak et al., 2007).

Dimensions of Value Creation					
Level of Analysis of Source of Value Creation	Academic Lens	Target or User of Value	Creation Process	Value Capture Process	Article
Society	<ul style="list-style-type: none"> <li>• Sociologists</li> <li>• Economists</li> <li>• Ecologists</li> </ul>	<ul style="list-style-type: none"> <li>• Individuals</li> <li>• Organizations</li> <li>• Government</li> </ul>	<ul style="list-style-type: none"> <li>• Innovation and new firm creation</li> <li>• Competition</li> <li>• Capital investment</li> <li>• Incentives</li> <li>• Laws and regulations</li> </ul>	<ul style="list-style-type: none"> <li>• Factor conditions</li> <li>• Demand conditions</li> <li>• Supporting industry infrastructure</li> <li>• Firm strategy and rivalry</li> </ul>	Lee, Peng, & Barney
Organizations	<ul style="list-style-type: none"> <li>• Strategic management</li> <li>• Organization theory</li> <li>• Strategic HRM</li> </ul>	<ul style="list-style-type: none"> <li>• Consumer</li> <li>• Society</li> </ul>	<ul style="list-style-type: none"> <li>• Invention</li> <li>• Innovation</li> <li>• R&amp;D</li> <li>• Knowledge creation</li> <li>• Structure and social conditions</li> <li>• Incentives, selection, and training</li> </ul>	<ul style="list-style-type: none"> <li>• Rare, inimitable, non-substitutable resources</li> <li>• Intangible resources</li> </ul>	<ul style="list-style-type: none"> <li>• Sirmon, Hitt, &amp; Ireland</li> <li>• Kang, Morris, &amp; Snell</li> </ul>
Individuals	<ul style="list-style-type: none"> <li>• Psychology</li> <li>• Organizational behavior</li> <li>• HRM</li> </ul>	<ul style="list-style-type: none"> <li>• Consumers</li> <li>• Client</li> <li>• Organization</li> </ul>	<ul style="list-style-type: none"> <li>• Knowledge creation</li> <li>• Search</li> <li>• Ability</li> <li>• Motivation</li> <li>• Training</li> </ul>	<ul style="list-style-type: none"> <li>• Network position</li> <li>• Unique experience</li> <li>• Tacit knowledge</li> </ul>	Teppo & Hesterly

When considering various perspectives on project value, Dr. Kerzner (2015) summarizes the differences between traditional and modern project management. (Table 3.)

**Table 3.** Changing view of value (Kerzner, 2015, p. 55).

Traditional project management	Modern project management
<ul style="list-style-type: none"> <li>- All projects in the queue must be completed eventually</li> <li>- Being on time and within budget is the definition of success</li> <li>- Being on time and within budget creates value</li> <li>- Good enterprise project management methodologies, when used correctly, will produce value</li> <li>- Customers want high-quality deliverables</li> <li>- Value is measurable at the end of the project once the deliverables have been achieved</li> </ul>	<ul style="list-style-type: none"> <li>- It does not matter if the project is completed if no business value is created</li> <li>- Success is creating business value within the competing constraints</li> <li>- Time and cost are not the only characteristics of value</li> <li>- Methodologies are useful but cannot generate value by themselves</li> <li>- Customers want deliverables that create business value; quality may be just one component of value</li> <li>- On some projects, value metrics can be established early on and tracked throughout the life of the project</li> </ul>

PMI defines the purpose of projects as follows: Projects exist within a larger system, such as a governmental agency, organization, or contractual arrangement. Organizations create value for stakeholders. Examples of ways that projects produce value include, but are not limited to (PMBOK Guide, 2021):

- Creating a new product, service, or result that meets the needs of customers or end users.
- Creating positive social or environmental contributions.
- Improving efficiency, productivity, effectiveness, or responsiveness.
- Enabling the changes needed to facilitate organizational transition to its desired future state.
- Sustaining benefits enabled by previous programs, projects, or business operations.

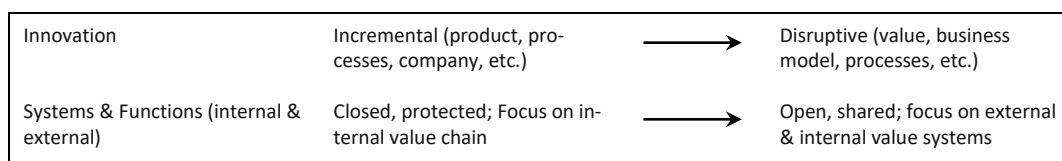
Understanding the project value requires a broad understanding about project management and the environment where value creating objectives are created. Mohammadian (Mohammadian, 2019, p. 18) suggests that value determination requires comprehensive knowledge of organization in question and its govern-

ance, strategic and competitive environments: “Without understanding the context, it is impossible to know what other organizational or environmental activities may be influencing resulting value”. Bruner (1990) adds that that it is impossible to understand the metrics and reference system of a company without first understanding the situated, contextual interpretations embedded within the management practices of the company. In summary: Valuing organizational initiatives is difficult and full with challenges (Thomas and Mullaly, 2006).

According to Voelpel et al.(2006), conventional business performance metrics are constrained for value measuring because of outdated assumptions from the industrial economy era excluding innovation economy knowledge and innovative capability. They propose that these traditional balanced scorecard measurements lack a contextual comprehension of the involved network of interconnected factors, relationships, and actions. All these aspects should be considered to ensure a project delivers maximum value to accurately evaluate an organization's performance in the knowledge economy. The contrast between a conventional mindset and a value innovation mindset is presented in Figure 3.

<b>Key Elements of Strategy Mindsets</b>	<b>Conventional Mindset (Goods-Centered Dominant Logic)</b>		<b>Value Innovation Mindset (Value/Service-Centered Dominant Logic)</b>
Industry Assumptions	Industry's conditions are given	→	Industry's conditions can be shaped
Goods	People exchange for goods, i.e. effects from operand resources	→	People exchange for value/service, i.e. effects from operand resources
Customers	Recipients of goods; market segments and group needs	→	Co-producers of value/services; individual profiles and customized needs
Value	Embedded in the operand resources; determined by the producer	→	Resulting from operand resources; determined by customer
Capabilities	Leveraging current capabilities of a company	→	Leveraging current and potential capabilities of networks
Competition	Outperform/beat the competition	→	Reinvent value to shift the competitive base
Boundaries	Fixed, static company and market boundaries; closed systems	→	Flexible, dynamic company; market and network connections; open systems





**Figure 3.** Figure Source (Kim and Mauborgne, 1999; Vargo and Lusch, 2004; Voelpel et al., 2006)

The importance of understanding the context of a project is also emphasized by Thomas and Mullaly (2007), who suggest that the following variables are likely to influence value creation in a project, either by facilitating or hindering the process of generating and recognizing added value:

- If the project management initiative does not “fit” with the organization or its strategic or competitive environment, it is unlikely to deliver desired results (Kimberly and Evanisko, 1981)
- Something else going on in the organization may weaken, jeopardize, or overstate the potential benefits from the project management initiative (Damanpour, 1996, 1987)
- The lag between the time the project management initiatives are undertaken and the time the benefits occur (Damanpour and Evan, 1984)

## 2.7 Communication in Project Management

Rajkumar (2010) underscores the importance of communication in a project, stating that project success is largely dependent on the efficiency of the communication network of the project. She defines communication as the efficient exchange of information from one point of the project to another.

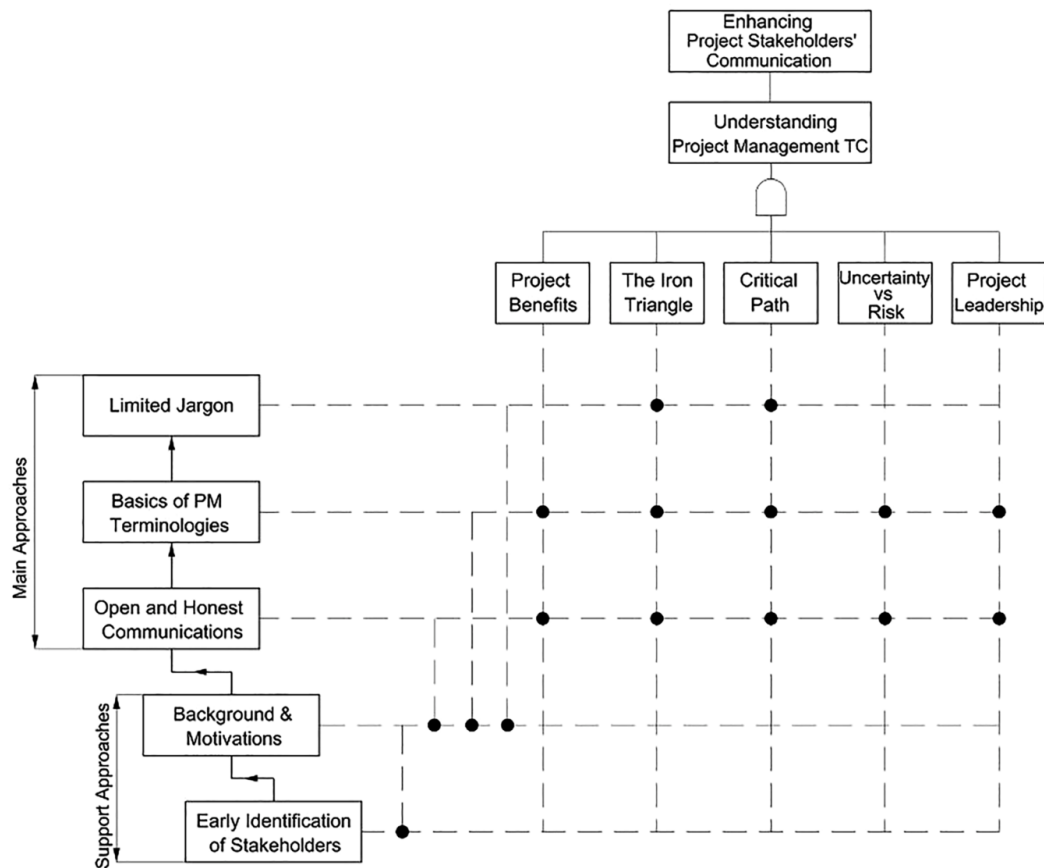
Project Management Institute (PMI) defines communication as the exchange of information, whether it is intended or involuntary. The information exchanged can be in the form of ideas, instructions, or emotions (PMBOK Guide, 2017). Zulch (Zulch, 2014a) notes that project managers' communication skills significantly impact the cornerstone areas of project management, namely cost, scope, time, and

quality. Poor communication between the project manager and stakeholders increases risks and makes it more difficult to mitigate them (Hatamleh et al., 2021).

Project managers need effective channels of communication to influence others. To get things done with the cooperation of groups or functions over whom they have little or no formal authority they need to engage in an intense communication process (Boddy, 1992).

Communication is needed to keep stakeholders informed and committed to common objectives. Effective communication allows project teams to coordinate their efforts, make informed decisions, and resolve conflicts in a timely manner. Communication therefore is a strong force that influences project success. The project leader needs to develop a leadership style that fosters effective and efficient communication with stakeholders (Zulch, 2014b).

In addition to being an effective communicator, a project manager also needs to possess competence in project management fundamentals, such as understanding basic concepts and identifying all stakeholders in the early phase of the project. The goal tree success tree master logic diagram (GTST-MLD) presented in Figure 4, illustrates the essential requirements from different knowledge areas for a project manager to communicate successfully.

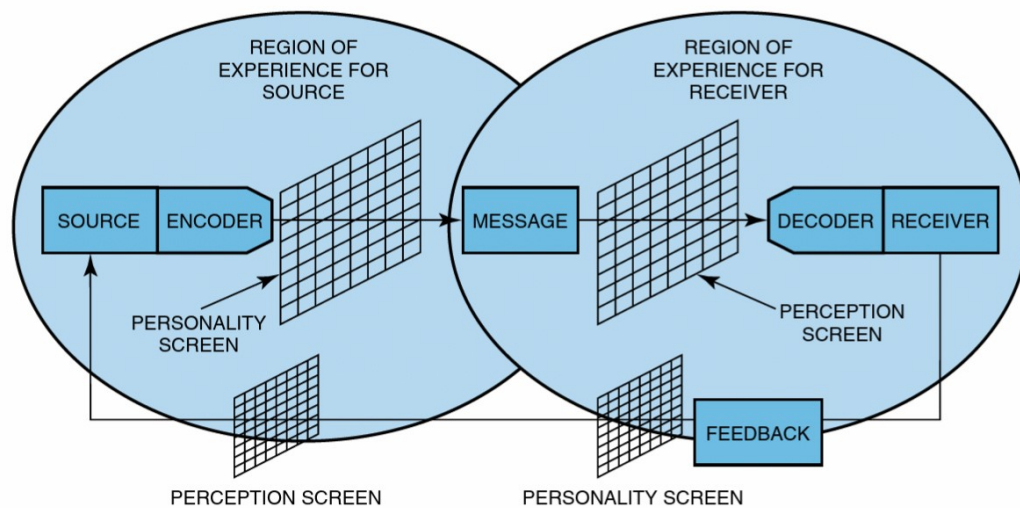


**Figure 4.** Graphic portrayal of the GTST-MLD for modeling project stakeholders' communication (Zwikael et al., 2022).

Based on citation count, (Afroze and Khan, 2017) have recognized four most important communication practices for effective communication:

- 1) Communication Quality as defined Aubert et al. (2013): Communication quality as the degree of accuracy, clarity, detail, relevance and timeliness.
- 2) Communication Frequency
- 3) Communication Formality: Concept of communication formality is addressed in more detail in chapter [reference]
- 4) Communication Bi-Directionality

Sending and receiving communication is often not so straightforward as intended. Factors such as individual perception, personality, attitudes, emotions, and prejudices can influence both the sending and receiving of messages (Kerzner, 2013). (Figure 5.)



**Figure 5.** Total communication model (Cleland and Kerzner, 1986, p. 46)

Worldwide pandemic COVID-19 increased the amount of remote work and changed many working environment rapidly regarding how much employees work at a physical office location (Kähkönen, 2023). The sudden increase in remote work led to an almost overnight shift in the distribution of communication methods and channels. Remote working is a flexible work arrangement that allows employees to perform their job duties from a location outside of the traditional office setting. Remote working increases the use of computer-mediated communication and how and why project managers communicate.

A study about Virtual team performance (Kashive et al., 2022) concluded that there is increased risk for misunderstandings and problems delivering intended messages since virtual leaders do not meet their team face to face frequently. Thereby, Kashive et al. highlight the importance of the communication quality and

skills of leaders and managers. Research also found out that communication quality partially mediates the relationship between both leadership roles and different aspects of trust.

### **2.7.1 Formal and Informal Communication**

Communication can be categorized into formal and Informal communication yet defining exact boundaries for these two classes remains unclear due to ambiguous interface of formal and informal communication (Koch and Denner, 2022). Sometimes formal and informal communication can be referred as professional and personal communication (Kerzner, 2013).

However, there is generally unambiguous acceptance of the fundamental differences between formal and informal definitions. Formal communication is considered as communication that is pre planned and often documented such as meeting agenda or status report. Informal communication is by nature a more unstructured, spontaneous, and often casual exchange of information.

PMBOK Guide (2017) defines formal and informal communication activities as follows (but not limited to):

- Formal communication: Reports, formal meetings (both regular and ad hoc), meeting agendas and minutes, stakeholder briefings, and presentations.
- Informal communication: General communications activities using emails, social media, websites, and informal ad hoc discussions.

Formal communication has crucial impact on project clarity and consistency. As projects grow, it is progressively more difficult to rely on informal channels of communication. Project managers find benefit in building formal means of passing and receiving information – to staff or users, to colleagues, and to senior managers. These help to ensure that the project managers story is available, to counter whatever information is passing through the informal channels (Boddy, 1992).

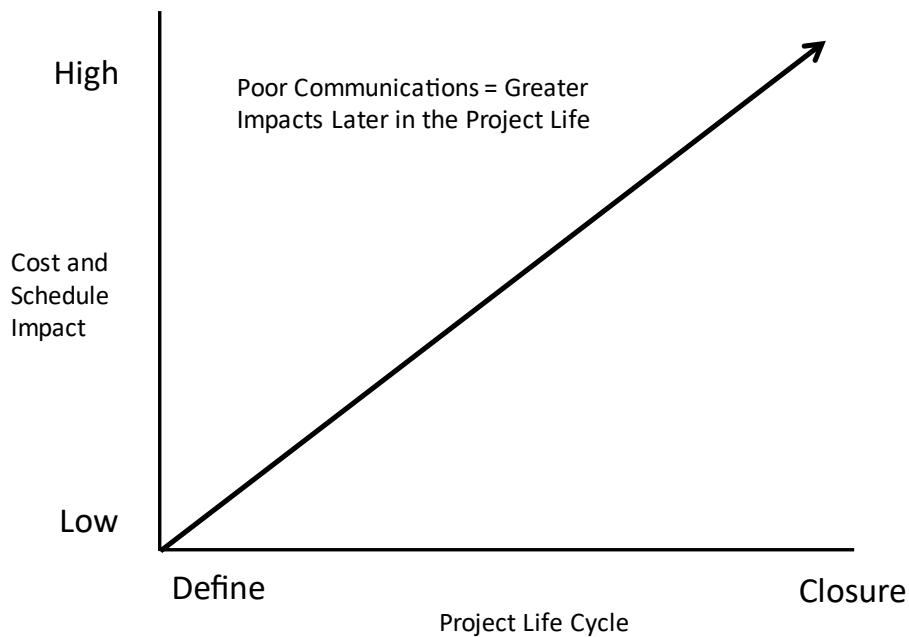
Informal communication and relations easier way for building trust and getting honest opinions than relying on formal methods of communication (Berkun, 2005). Karlsen et al. (2008) suggests that projects should pay focus on building informal relations to promote better communication.

Peters and Austin (1985) introduced concept management by walking around (MBWA) in their book called *A Passion for Excellence: The Leadership Difference*. MBWA was described as a central quality in the successful managers they observed. Successful managers were bound to invest time in building informal relationships with people at different levels and roles in a team. An understanding of how healthy communication and relationships work and committing these skills are required for MBWA to work and that is not easy (Berkun, 2005; Boddy, 1992; Peters and Austin, 1985; Ramsing, 2009).

## **2.8 The Role of Communication in Project Success**

The importance of communication for project success has been widely acknowledged for a long time. According to, Pinto and Pinto (1990), project communication is the means through which personnel from multiple functional areas share information that is critical to the successful implementation of projects.

Sivasankari Rajkumar (2010) states that the success of a project largely depends on the efficiency of its communication network. Project communication can be seen as Project Life Blood because practically everything in a project is based on how efficiently communication is project communication is practiced. Price of poor communication is high and mistakes in communication keeps adding up whole project life cycle as seen in Figure 6.



**Figure 6.** The Price of Poor Communication (Rajkumar, 2010)

Nowadays at least organizations with high level project management maturity are very aware of just how critical effective communications is to the success of strategic projects and, ultimately, organizational success. Ziek and Anderson (2015) suggest that communication should be seen as constitutive of the trajectory of a project. Communication thereby plays a crucial role in shaping the direction and progress of a project. By fostering a culture of open and transparent communication, team members are more likely to share information about potential issues and roadblocks. This enables the project manager to address problems proactively, reducing the chances of project delays or cost overruns (Pinto et al., 1995; Project Management Institute, 2013).

The information from ample sources handled in chapters 2.7, 2.71 and 2.8 leads to the following hypothesis: H1 - Project communication is positively associated with project performance.

## 2.9 Trust in Project Management

Trust is complex and multifaceted construct that been given a lot of focus from different disciplines and theoretical approaches (Maurer, 2010). Trust is a multidimensional concept that reflects the confidence and the belief in reliability and competence of project team members or among project stakeholders, promoting collaboration and effective execution of project tasks.

Trust has also been identified and studied at the neurobiological level. Studies have shown that oxytocin levels, a hormone in the human body, react when we receive a sign of trust from others, and these signs are linked to trustworthy actions (Kosfeld et al., 2005; Zak et al., 2004). When trust signal is absent, both the oxytocin response and high levels of trustworthiness disappear. Zak et al. (2017) have later found that the relationship between oxytocin and trust is universal and don't depend on culture.

Even though positive effects of trust are commonly known, trust is often hard to initiate and maintain in project contexts as complexities and uncertainties often cause risks and discontinuity in relationships (Xu et al., 2021).

In a working environment trust can often be separated into horizontal trust and vertical trust. Horizontal trust represents trust among coworkers without presence of formal authority whereas vertical trust exists in supervisor-subordinate and employee-upper management relationships (Tan and Lim, 2009). Furthermore vertical trust can be divided to three subcategories used as referents of trust: subordinate-supervisor, subordinate-management, and subordinate-organization (Özyılmaz, 2014).

Numerous distinct approaches to categorize different types of trust have been suggested in various models presented in various academic research. A compilation of nine different types of trust are presented in Table 4.

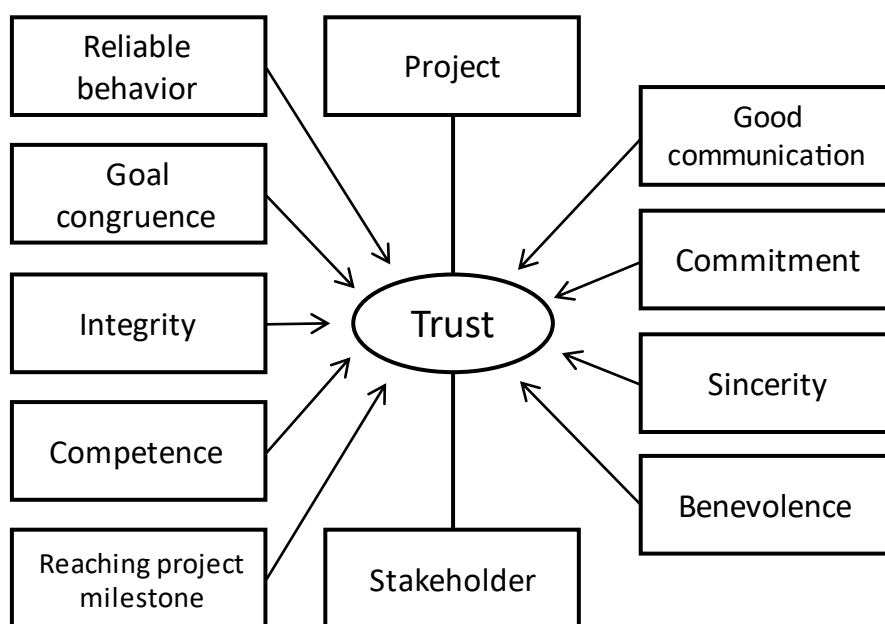


**Table 4.** Alternate models of trust summarized in the study of Pinto et al. (2009)

Hartman (1999)	Rosseau et al. (1998)	Lewicki and Bunker (1996)
<ol style="list-style-type: none"> <li>1. Integrity trust – ethical trust or the belief that one party will routinely look after the interests of another party</li> <li>2. Competence trust – the belief that the other party has the ability to perform the work assigned</li> <li>3. Intuitive trust – the emotional or “gut feeling” that one party can trust the intentions and actions of the other party</li> </ol>	<ol style="list-style-type: none"> <li>1. Calculus-based trust – trust is motivated by self-interest or economic incentives</li> <li>2. Relational trust – trust emerging through repeated, direct interactions that spark a comfort level between parties</li> <li>3. Institution-based trust – the role played by legal institutions, cultural and societal norms in promoting trust within a culture or country</li> </ol>	<ol style="list-style-type: none"> <li>1. Deterrence-base trust – parties can be trusted to keep their word in order to avoid sanctions for violation</li> <li>2. Knowledge-based trust – parties know each other well enough that their behavior toward each other is predictable</li> <li>3. Identification-based trust – mutual understanding is developed to the point where parties can act on each other’s behalf</li> </ol>

Based on literary research and empirical studies, Karlsen et al. (2008) found that the most important factors for building trust between stakeholders are reliable behavior, good communication, sincerity, and competence. (Figure 7.)

Norman et al. (2010) sums up that those employees who perceive their leaders to be open and optimistic seem to trust them and judge them to be effective in leading them through challenging times such as organization downsizing scenario.



**Figure 7.** The model for trust building in a project-stakeholder relation (Karlsen et al., 2008).

Steering committee can also play a role for boosting trust in project organization as Karlsen found out in his case study: “The steering committee had a significant impact on governance and, in turn, created trust in the management. The result was high trust (at the management level) and improved performance.” The study showed also that forming a steering committee is a vital step to include in the project when the project owner does not have the capacity or knowledge to follow-up on the project. (Karlsen, 2020)

Trust is an important factor in building employee commitment towards their organizations. A study by Togna (2014) examined the company Micron Technology to understand how employee trust affects employee commitment. The research findings revealed that in departments with lower trust levels, there is a positive relationship between trust and commitment. This means that as trust increases, so does commitment. However, in departments where employee trust is already high, the commitment level does not continue to increase proportionally. Instead, trust level appears to reach a point of satisfaction where further increases in trust do not necessarily lead to higher commitment levels.

Trust is highly beneficial for project organization, increasing project performance being a critical success factor. Generally there exists well known collective consensus that trust is highly beneficial to the functioning of organizations (Dirks and Ferrin, 2001).

Pinto et al. (2009) sums up the relevance of trust in project management as follows: "A great deal of literature has pointed to the importance of trust as a facilitator of positive relationships among project stakeholders. Trust is argued to enhance a variety of intra-organizational relationships, including project team dynamics, top management support, and coordination across functional departments."

There is always an exception: in certain special situations too much unquestioned trust can lead to group thinking that hinders critical decision making (Parker et al., 2017).

In Project management, trust is vital for enabling effective and seamless communication, proactive and voluntary problem solving, ultimately contributing to successful project outcomes. This leads to the following hypothesis: H3 - trust is positively associated with project performance.

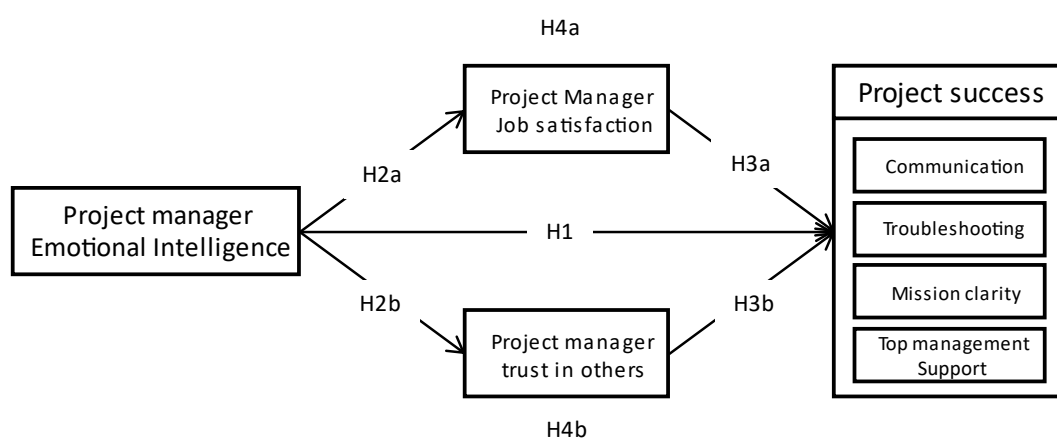
### **2.10 Relationship Between Communication and Trust**

Trust enhances communication by creating an atmosphere where team members feel comfortable sharing their ideas, concerns, and feedback without fear of judgment or retribution.

The concept of positive correlation between communication and trust is not new. Dirks and Ferrin (2001) concluded from studies conducted between the 1950s and 1990s that individuals transmit more information, and/or information of higher fidelity, to a superior or work partner when they trust that individual.

Trust thrives from communication and timely recognition has been identified as a boost for trust. The neuroscience shows that recognition has the largest effect on trust when it occurs immediately after a goal has been met, when it comes from peers, and when it is tangible, unexpected, personal, and public. Public recognition not only uses the power of the crowd to celebrate successes, but also inspires others to aim for excellence (Zak, 2017).

A study by Rezvani et al. (2016) found that project managers with high emotional intelligence can foster trust among project team members, which in turn promotes key factors for project success, such as effective communication. The study proposed a model illustrating how an individual's reactions to their feelings and emotions at work can influence their attitude and behavior in the workplace. (Figure 8).



**Figure 8.** (Rezvani et al., 2016) Conceptual framework

Not feeling trusted can have major impact on communication and cause organizational silence (Morrison and Milliken, 2000; Zhu et al., 2019). Organizational silence can be described as widespread withholding of information about potential problems or issues by employees. One way to compensate for the lack of trust is adding control which, on the other hand, adds cost and can affect schedule (Jørgensen and Åsgård, 2019).

Trust is important in both upward and downward communication. A study of Morrison and Milliken (2000) highlights the importance of honest upward communication in organization. However, if the culture of fear and silence have grown dominant, changing it is very difficult even though it is generally known in the organization – leaders included – that present organizational climate is not good for individuals nor the success of organization.

The flow of information from higher levels of the organization such as line managers, team leaders and project managers to lower-level team-members can be referred to as downward communication. A study of Porumbescu et al. (2013) found out that use of direct interpersonal communication between leaders and their subordinates tended subordinates to foster more positive attitudes toward the organization in general.

It is essential to bear in mind that increasing communication does not automatically create trust. If the communication receiver does not trust the sender, the effect for building trust can be opposite. Chory and Hubbel's study (2008) about organizational justice and trust found out that subordinates respond to perceived violations of justice and trust by superiors with a violation of their own. For example, to get a positive outcome from performance appraisals the assessment, procedures and communication should be experienced as fair and coming from trusted superior.

Diallo and Thuillier (2005) state that at least a basic level of trust is necessary, as effective communication is hampered when the exchange of information is overshadowed by concerns about communicators motives.

As a result, the following hypothesis is formulated: H2 - Project communication is positively associated with trust.

### 2.11 Role Clarity and Its Relationship with Project Communication

Role clarity in project management refers to the clear definition and understanding of each team member's responsibilities, duties, and expectations in a specific project. This includes not only individual team members understanding their own roles but also knowing the roles of their colleagues. A person with high role clarity knows when, where, and how their services are needed. This mutual understanding makes collaboration more efficient and straightforward, leading to more effective communication and overall project success (Henderson et al., 2016; Hinkin and Schriesheim, 2008; Katz and Kahn, 1978; Khattak et al., 2020).

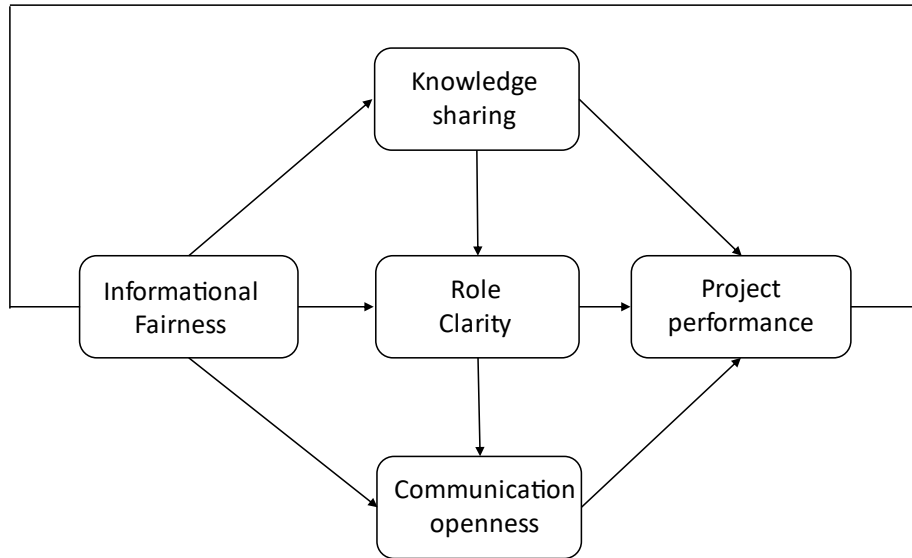
Following challenges have been identified related to role clarity in project management (Henderson et al., 2016):

- Balancing demands between different managers (project vs. line).
- Different responsibilities of their project roles (as compared to other project members) due to the differential sizes of their respective locations.
- Distance from their project managers and other key stakeholders.
- Being placed on projects due to one's availability, not one's skill set.

The research paper of Khattak et al. (2020) concludes that role clarity is also instrumental in strengthening the role of knowledge sharing and communication openness as a process behind the above relationship. The research paper also states that project performance is positively associated with role clarity which in turn can be cultivated by informational fairness – in other words – good communication.

Beringer et al. (2013) suggest that “Role clarity aims for both formal differentiated role descriptions and actually practiced behavior, indicating whether each task is performed exclusively by the intended stakeholder”.

Khattak et al. (2020) did find out that role clarity partially mediates the relationship between informational fairness and project performance. Research model of the study is shown in figure below.



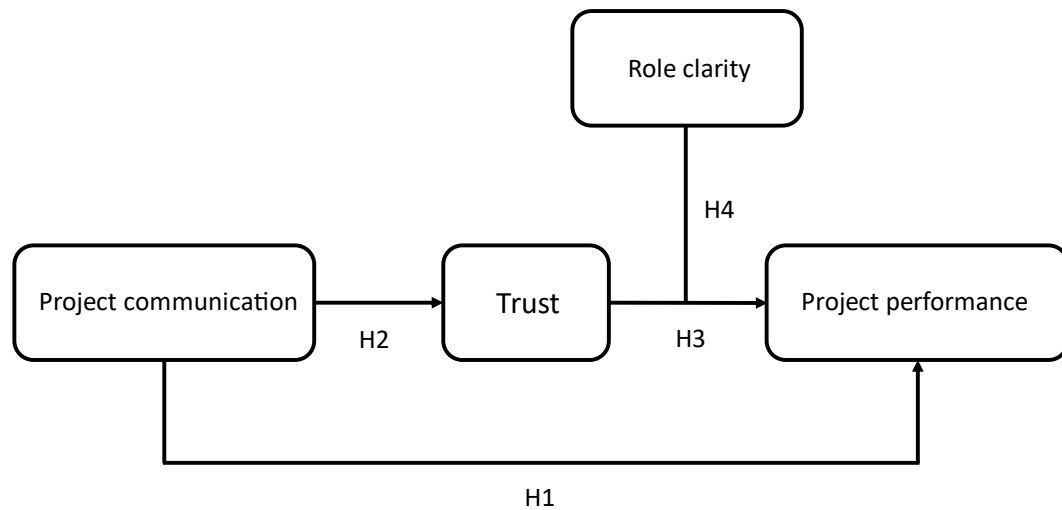
**Figure 9.** Research model of Khattak et al. (2020)

According study of Spik (2019), role clarity among communication is strong predictor of team effectiveness and thereby project performance. Bolino and Turnley (Bolino and Turnley, 2005) also state that role clarity has been recognized for its impact on performance.

The study by Majid et al. (Majid et al., 2023) discovered that role clarity fully mediates the relationship between transformational leadership and championing behaviour.

Hence, the following hypothesis is formalized: H4 - Role clarity mediates the relationship between communication and project performance.

## 2.12 Hypothesis and Research Model



**Figure 10.** Research model of the thesis

Four hypotheses were formulated from the research model (Figure 10):

- H1. Project communication is positively associated with project performance.
- H2. Project communication is positively associated with trust.
- H3. Trust is positively associated with project performance.
- H4. Role clarity moderates the relationship between trust and project performance.



### **3 RESEARCH METHOD**

A quantitative research method was chosen to test the hypotheses of the thesis. Data was collected via a questionnaire and hypotheses were tested using common scientific statistical methods. The collected data was screened and analyzed with the IBM SPSS software, a widely used statistical analysis software, especially in social sciences. According to Martin (2012): “The hypothesis-testing process is the most commonly used tool in science and entails following a logical sequence of actions, judgments, decisions, and interpretations as statistics are applied to research problems.”

#### **3.1 Research Setting**

Vaasa is a central city in Ostrobothnia. It is located on the coast of the Gulf of Bothnia. The unique Kvarken archipelago off the coast of Vaasa is Finland's only natural heritage site on the international UNESCO World Heritage List.

Vaasa is an international city with about 120 nationalities and 100 mother tongues spoken there. Vaasa has a population of about 67,000, of which almost 70% are Finnish-speaking, just over 20% are Swedish-speaking and about 10% speak other languages. With neighbouring municipalities, the population of the Vaasa region is about 113,000.

There are six higher education institutions in Vaasa. The city has 12,000 higher education students and 4,000 vocational school students.

The Vaasa region is the Nordic centre for energy technology. In Vaasa, energy is a positive force that is not only visible in business, but also in people's everyday lives and the development of the city. The Nordic Energy Capital is a unique combination of modern internationalism, young enthusiasm, innovative know-how as well as delicate tranquility (InfoFinland 2023).

The City of Vaasa Urban Environment Sector (UES) is responsible for the living environment in the City of Vaasa, the city's technical infrastructure and services. Maintaining and developing transport system, providing water management and air quality monitoring are examples of services provided by Urban Environment Sector (vaasa.fi, 2023).

Urban Environment Sector consists of following entities:

- Building control
- Environmental office
- Public Utility Services
- Real estate office
- Vaasa Premises Management Office
- Vaasa Water
- Urban Planning

All entities previously mentioned were selected to participate in the questionnaire. The focus group comprised individuals who had participated in project work in various roles, from project worker to project director. Principally, all individuals selected for the survey hold positions that typically require a higher level of education, although a certain group of individuals with extensive work experience at the City of Vaasa hold their current positions despite having a lower level of education.

### **3.2 Data Collection**

The questionnaire was implemented as an online survey with Webropol's platform. The questionnaire was sent to 131 people as an online survey. Invitation for questionnaire was sent via email with comprehensive introduction. Since the survey was conducted online in June, some of the recipients were already on vacation. Based on automatic email responses and calendar entries, 18 individuals clearly indicated that they were unable to answer the questionnaire. As none of these 18 responded, they can be excluded as ineligible to answer from the pool of

recipients. Therefore, the adjusted number 113 (131 - 18) is to be used when calculating the response rate.

The questionnaire was open from June 13, 2023, to June 30, 2023. During the response period, four reminders were sent out, adjusted to coincide with periods when the flow of responses slowed down. These reminders were effective and did intensify the response rate after each reminder was sent. The total number of responses was 86, resulting in an answer rate of 76 %.

In data preparation, out of 86 responses, five were excluded from the analysis because the respondents left one or more questions unanswered on their answer sheets. Consequently, 81 responses were used in the analysis.

### **3.3 Measurement of Construct**

The questionnaire consisted of 32 questions addressing communication, trust, role clarity, and project performance. Responses were measured on a five-point Likert scale, with 1 = Strongly disagree and 5 = Strongly agree.

In addition, the questionnaire included questions to gather background information about the respondents and a free-text field for suggestions to improve project work in the City of Vaasa's Urban Environment sector.

#### **3.3.1 Project Communication**

The measurement items (5) regarding project communication were taken from (Majeed et al., 2021) and (Roberts et al., 2004). The individuals selected for the survey were asked about their perceptions of communication in projects conducted by the City of Vaasa's Urban Environment sector. Items were: (1) Everyone participates; (2) Everyone has a chance to express their opinion; (3) We listen to each individual's input; (4) Members of workplace feel free to make positive and negative comments; (5) Even though we do not have total agreement, we do reach a kind of consensus that we all accept.

Cronbach's alpha, which was used for validating the internal consistency for this five-item section of the questionnaire, was 0.85.

### **3.3.2 Trust**

The measurement items (13) for questions about trust were taken from Tyler, (2003) and Dietz and Den Hartog, (2006). The individuals selected for the survey were asked about their perceptions of trust in projects conducted by the City of Vaasa's Urban Environment sector.

Questions regarding trust consisted of five items about vertical trust and eight items about horizontal trust.

Items (5) regarding vertical trust were: (1) The directors and managers consider my view; (2) The director and managers try to make my needs into account; (3) The directors and manager try hard to do the right things by me; (4) The directors and managers care about my concern; (5) My views are considered when decisions are made.

Cronbach's alpha, which was used for validating the internal consistency for this five-item section about vertical trust, was 0.91.

Items (8) regarding horizontal trust were: (1) I trust that my colleagues can be relied upon; (2) I trust that my colleagues would keep their promises; (3) I trust that my colleagues can contribute to the success of the organization; (4) I trust that my colleagues would acknowledge their mistakes; (5) I trust that my colleagues take care about the future of the organization; (6) I trust that my colleagues place the organizations interest above their own; (7) I trust that my colleagues express their true feelings about issues; (8) In my organization, my colleagues tell the truth if even it is unpleasant.

Cronbach's alpha, which was used for validating the internal consistency for this five-item section about horizontal trust, was 0.85.

### **3.3.3 Role Clarity**

The measurement items (6) for questions about role clarity were taken from Henderson et al., (2016). The questionnaire participants were asked about their perceptions of role clarity in projects conducted by the City of Vaasa's Urban Environment sector, as well as their understanding of their overall job description.

The items (6) regarding role clarity were: (1) I feel certain about how much authority I have; (2) There are clear, planned goals and objectives for my job; (3) I know that I have divided my time properly; (4) I know what my responsibilities are; (5) I know exactly what is expected of me; (6) Explanation is clear of what has to be done.

Cronbach's alpha, which was used for validating the internal consistency for this six-item section about role clarity, was 0.85.

### **3.3.4 Project Performance**

The measurement items (8) for questions about project performance were taken from Cheung et al., (2013). The questionnaire participants were asked about their perceptions of project performance in projects conducted by the City Vaasa's Urban Environment sector.

The items (8) regarding project performance were: (1) Generally, the projects are completed on schedule; (2) The claim of extension of time is reasonable; (3) Projects are completed within budget; (4) Cost control during project implementation phase is efficient; (5) Defects are kept minimized in the project; (6) Costs of the projects are reasonable; (7) The quality of the project's end results is satisfactory; (8) Based on feedback, end users are satisfied with the end results of the project.

Cronbach's alpha, which was used for validating the internal consistency for this eight-item section about project performance, was 0.88.

## 4 ANALYSIS AND RESULTS

This chapter presents the statistical analysis and interpretation of the questionnaire output data.

The summary of statistics are calculated separately for Communication, Vertical Trust, Horizontal Trust, Role Clarity, and Project Performance (Table 5). The possible scale for output ranges from 1 to 5, with higher values indicating a greater experienced level in the respective sub-area. According to the survey, all five measured factors were experienced to be at a relatively good level, with project performance being a few decimals lower than the other factors.

The results concerning role clarity also addressed the second research question 2, which asked: “What is the level of role clarity in projects within the City of Vaasa's Urban Environmental Sector?”. Role clarity was perceived as the highest, with a score of 3.86, of all the measured factors. This can be considered a good result, especially in relation to the other measured factors.

**Table 5.** Descriptive statistics

	N	Minimum	Maximum	Mean	Std. Deviation	Cronbach's alpha
Communication	81	1.20	5,0	3.77	.716	.85
Vertical Trust	81	1.80	5,0	3.73	.755	.91
Horizontal Trust	81	2.13	5,0	3.82	.625	.85
Role Clarity	81	2.17	5,0	3.86	.591	.85
Project Performance	81	1.75	4,88	3.52	.532	.88

### 4.1 Hypothesis Test

To analyse the survey data, a correlation matrix and path analysis were employed. (Table 6.) Hypothesis 1 (H1) suggested that project communication is positively

associated with project performance. This hypothesis was supported with  $r = 0.634, p < 0.001$ . The third hypothesis (H3) was that trust is positively associated with project performance. This was supported by both vertical trust  $r = 0.490, p < 0.001$  and horizontal trust  $r = 0.538, p < 0.001$  correlating with project performance. The second hypothesis (H2) proposed that project communication is positively associated with trust. This relationship was substantiated with  $r = 0.599, p < 0.001$  for vertical trust (H2a) and  $r = 0.674, p < 0.001$  for horizontal trust (H2b). The results also address Research Question 1: “How do trust and communication affect project performance in the City of Vaasa's Urban Environmental Sector?”. Keeping in mind that correlation does not necessarily imply causation, the findings suggest that trust and communication may be significant factors in achieving effective and successful project work.

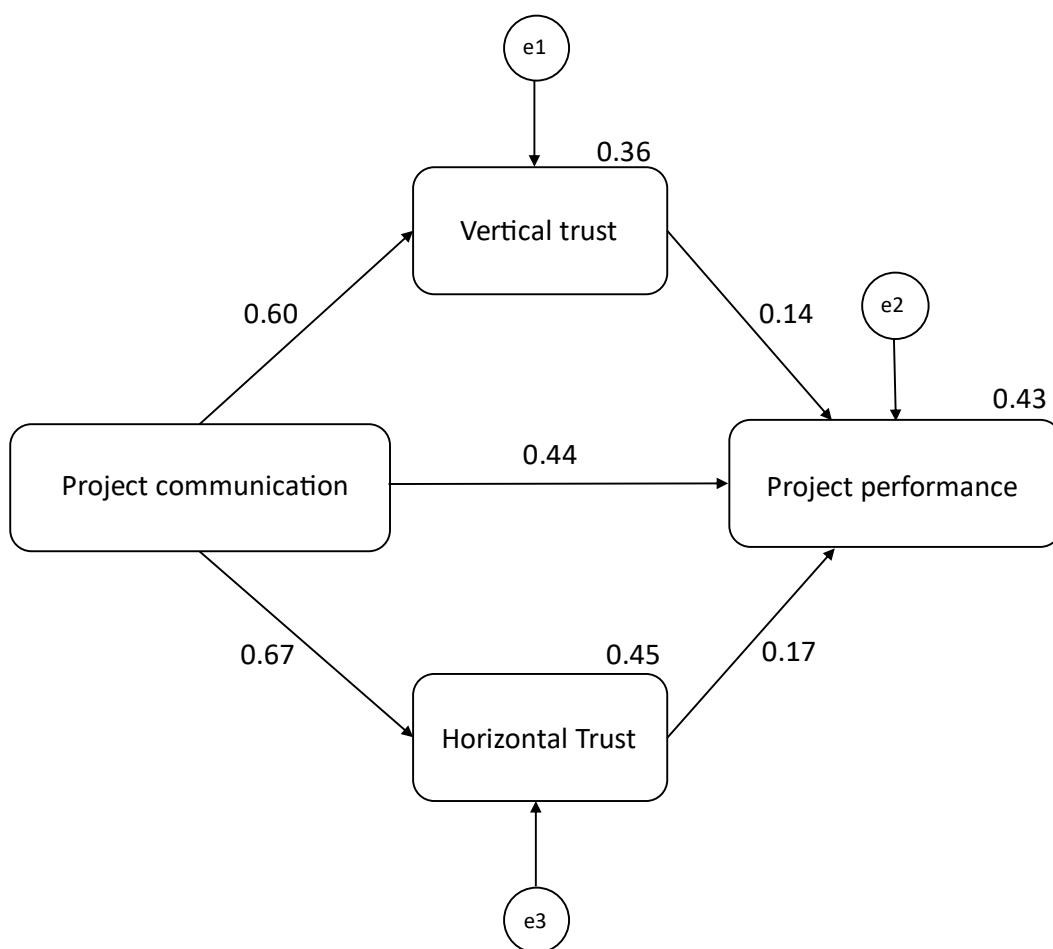
**Table 6.** Correlation matrix. \*\*Correlation is significant at 0.01 level (two tailed), \*  $p = 0.02$

	1.	2.	3.	4.	5.
1. Communication	1	.599**	.674**	.357**	.634**
2. Vertical Trust		1	.547**	.422**	.490**
3. Horizontal Trust			1	.439**	.538**
4. Role Clarity				1	.312*
5. Project Performance					1

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

The correlation matrix suggests the hypotheses that project communication and trust are positively associated with project performance (H1 and H3) and communication is positively associated with project trust (H2).

Hypothesis H1, H2 and H3 were tested more in-depth with structural equation modelling (SEM) using IBM SPSS AMOS -software (McCormick et al., 2017). (Figure11)



**Figure 11.** Structural equation modeling model (standardized estimates)

The regression weight of variables in SEM Model (unstandardized estimates) are presented in Table 7. Table 7 shows that project communication is positively related to Project performance (regression coefficient = 0.329,  $p = 0.00$ ) confirming results shown in correlation matrix. Furthermore, hypothesis communication is positively related to trust is supported for both vertical trust (regression coefficient = 0.632,  $p = 0.00$ ) and horizontal trust (regression coefficient = 0.589,  $p = 0.00$ ).

The hypothesis that trust is positively associated with project performance was rejected for both vertical trust (regression coefficient = 0.095,  $p = 0.197$ ) and horizontal trust (regression coefficient = 0.141,  $p = 0.145$ ), as the relationships were



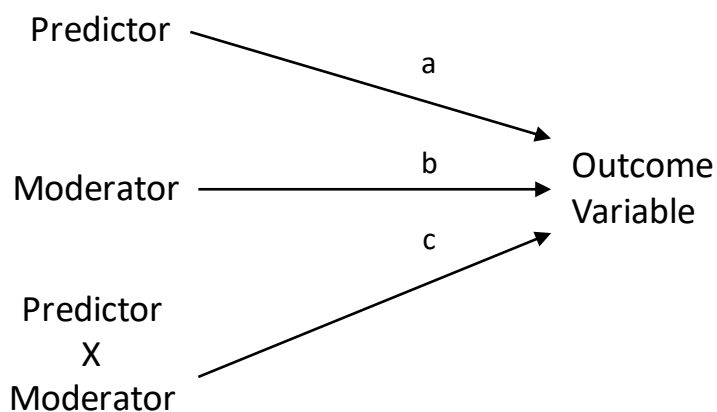
not statistically significant in the SEM model. In summary, according to SEM modeling, hypotheses H1 and H2 are accepted, while H3 is rejected. The hypothesized model appeared to fit the data. The maximum likelihood estimation was used because the research data were normally distributed. The NFI was 0.99, GFI was 0.97 and RMSEA was 0.04.

**Table 7.** Regression weight of variables in SEM Model (unstandardized estimates)

	Estimate	P value
Project communication → Performance	0.329	0.00
Project communication → Vertical trust	0.632	0.00
Project communication → Horizontal trust	0.589	0.00
Vertical trust → Project performance	0.095	0.197
Horizontal trust → Project performance	0.141	0.145

A moderating variable is a qualitative or quantitative variable that affects the strength or direction of the relationship between an independent or predictor variable and a dependent or criterion variable. (King, 2013)

The moderating effect of role clarity on the relationship between trust and project performance was tested using moderation regression analysis (Baron and Kenny, 1986). See Figure 12.



**Figure 12.** Example of a statistical model of a moderator variable. (Baron and Kenny, 1986)

Hypothesis 4 suggested that Role clarity moderates the relationship between trust and performance. Hypothesis was tested separately for vertical trust (H4a) and Horizontal trust (H4b). The results for moderating analysis, presented in Table 8 and Table 9, pointed out that role clarity moderates the relationship between vertical trust and project performance. Role clarity does not impact the relationship between horizontal trust and performance.

**Table 8.** Results of moderated regression analysis for role clarity moderating the relationship between vertical trust and project performance (H4a).

Dependent variable:	Type III Sum of	df	Mean	F	P value
Project performance	Squares		Square		
Role clarity * Vertical trust	1.013	1	1.013	4.904	0.030

**Table 9.** Results of moderated regression analysis for role clarity moderating the relationship between horizontal trust and project performance (H4b).

Dependent variable:	Type III Sum of	df	Mean	F	P value
Project performance	Squares		Square		
Role clarity * Horizontal trust	0.251	1	0.251	1.229	0.271

## 5 CONCLUSIONS AND DISCUSSION

The study emphasizes the importance of communication for project performance. According to the survey, trust, communication, and role clarity are at a relatively good level in project work within the City of Vaasa Urban Environmental Sector.

The findings of the thesis regarding relationships to communication and trust align well with parallel studies conducted in other case organizations. In statistical terms, the quality of the survey data was high and reliable.

Communication and trust play key roles in successful project management, yet the direct effect of trust on project performance is not as straightforward as proposed, according to the survey data used in this thesis. According to findings, while trust correlates positively with project performance, it does not directly cause improved performance.

The study partially supported Hypothesis 4: Role clarity moderates the relationship between trust and project performance. The effect of vertical trust on project performance increased with role clarity. However, a similar effect was not statistically significant when horizontal trust served as a moderator. One possible reason for this could be that in horizontal trust, communication operates effectively enough at a lateral level that role clarity, as a separate variable, becomes less important in enhancing productivity and project performance.

The phenomenon of role clarity moderating the positive relationship between vertical trust and project performance is not directly recognized by the existing literature. An assumption can be made that a major component of role clarity is communication, which also plays a key role in forming vertical trust. Combined, these elements are linked to enhanced individual and organizational performance, as well as team dynamics, which in turn have an impact on project performance. Another assumption is that vertical trust alone cannot patch up the lack of role clarity which often is given from hierarchically higher level. When a project team member

is not aware of the requirements of his or her expected work duties, lateral discussions with colleagues cannot compensate for the lack of role clarity. This assumption is especially relevant in hierarchical organizations such as case organization in this thesis. A more accurate analysis of this topic would have expanded the consideration to include at least organizational culture and leadership styles, which were not part of the scope of this thesis. This leaves room for follow-up research in these areas.

The study showed that horizontal trust had a greater impact on project performance than vertical trust. This finding is consistent with earlier studies, which indicate that horizontal trust plays a more significant role in team learning and innovative work behavior. In turn, these factors lead to increased productivity and improved project performance (Agbejule et al., 2021; Hughes et al., 2018).

To promote development, defining criteria for a successful project would help the case organization enhance the maturity of its project management practices. This would also assist in identifying new areas for improvement related to successful project management, while considering the critical roles of trust and communication. The importance of stakeholder communication in public projects cannot be stressed enough.

The benefit of project management is in the value successful projects create. It is important to keep in mind that projects with great project performance can be unsuccessful if they do not produce enough value for project stakeholders. In this thesis project performance was chosen as a variable because City of Vaasa Urban Environmental Sector does not currently have established project management framework nor commensurate criteria for successful project or metrics for project value assessment. The complexity and difficulty of defining success in public projects are well-known in the literature (Crawford and Helm, 2009; Gasik, 2016; Volden, 2019, 2018; Volden and Welde, 2022).

The study employed a survey method, which has its limitations. The survey results represent a single survey conducted within the City of Vaasa Urban Environment Sector at one specific point in time. Generalizing results to other organizations should be done with caution.

The study contributes to and confirms existing academically established theories about the importance of communication in enhancing project performance, thereby increasing the likelihood of project success.

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## APPENDIX 1

### QUESTIONNAIRE IN FINNISH

#### Luottamus, kommunikaatio ja roolien selkeys projektityössä

##### 1. Millä tulosalueella työskentelet?

Kaavoitus

Kiinteistötoimi

Kuntatekniikka

Vaasan vesi

Ympäristöosasto

Rakennusvalvonta

Talotoimi

##### 2. Nimeä kaksi työnkuvasi tärkeintä vastuualuetta (yksikin riittää, jos se kattaa keskeisiltä osin työnkuvan tärkeimmät vastualueet)

Vastuualueita ryhmitellään ja yhdistellään vastausmääristä riippuen vastausten käsittelyvaiheessa. Kenenkään yksittäisiä vastuualueita ei julkaista erikseen.

##### 3. Oletko esihenkilö?

Kyllä

En

Kyselyn vastaajamäärästä riippuen voidaan tehdä tulosten käsittelyä ryhmittelemällä vastaajia esihenkilöaseman perusteella.

##### 4. Kuinka kauan olet työskennellyt nykyisessä toimenkuvassasi?

0-5 vuotta

6-10 vuotta

11-15 vuotta

16-20 vuotta

21+ vuotta

##### 5. Minkälaisien projektien / hankkeiden (työkokonaisuuksien) parissa työskentelet?

(Esim. sisäiset kehitysprojektit, erilaiset suunnitteluprojektit kuten kadun tai muun infran rakennus, asema- tai yleiskaavojen laatiminen tai siihen liittyvät selvityskokonaisuudet, rakennus- ja korjaushankkeet, uusien tietojärjestelmien käyttöönotto jne..)

##### 6. Vastaajan sukupuoli

Mies

Nainen

##### 7. Vastaajan ikä

20-29 vuotta

30-39 vuotta

40-49 vuotta

50-59 vuotta

60 + vuotta

**8. Kaikki projekteissa / hankkeissa mukana olevat osallistuvat aktiivisesti**

Vahvasti eri mieltä

Eri mieltä

Neutraali

Samaa mieltä

Vahvasti samaa mieltä

Huom! Koska projektitermistön käyttö kaupunkiympäristön toimialalla on vaihtelevaa, projektilla tarkoitetaan mitä hyvänsä työkokonaisuutta, jolla on aikataulu, tavoitteet ja resurssit.

**9. Kaikilla on mahdollisuus kertoa mielipiteensä**

Vahvasti eri mieltä

Eri mieltä

Neutraali

Samaa mieltä

Vahvasti samaa mieltä

**10. Projektin / hankkeen aikana kuunnellaan jokaisen työhön osallistuvan näkemyksiä**

Vahvasti eri mieltä

Eri mieltä

Neutraali

Samaa mieltä

Vahvasti samaa mieltä

**11. Työyhteisössämme on ilmapiiri, jossa työyhteisön jäsenet voivat vapaasti antaa toisilleen positiivista ja tarvittaessa negatiivista palautetta**

Vahvasti eri mieltä

Eri mieltä

Neutraali

Samaa mieltä

Vahvasti samaa mieltä

**12. Vaikka emme työyhteisössämme aina pääsisi täydelliseen yhteisymmärrykseen, saavutamme kuitenkin sellaiseen lopputulokseen, jonka kaikki voivat hyväksyä**

Vahvasti eri mieltä

Eri mieltä

Neutraali

Samaa mieltä

Vahvasti samaa mieltä

**13. Organisaatorakenteessa ylempänä olevat henkilöt kuuntelevat näkemyksiäni**

Vahvasti eri mieltä

Eri mieltä

Neutraali

Samaa mieltä

Vahvasti samaa mieltä

**14. Organisaatorakenteessa ylempänä olevat henkilöt ottavat minut huomioon**

Vahvasti eri mieltä

Eri mieltä

Neutraali

Samaa mieltä

Vahvasti samaa mieltä

**15. Organisaatorakenteessa ylempänä olevat henkilöt kohtelevat minua kunnioittavasti ja reilusti**

Vahvasti eri mieltä

Eri mieltä

Neutraali

Samaa mieltä

Vahvasti samaa mieltä

**16. Organisaatorakenteessa ylempänä olevat henkilöt ottavat huoleni vakavasti**

Vahvasti eri mieltä

Eri mieltä

Neutraali

Samaa mieltä

Vahvasti samaa mieltä

**17. Päätöksiä tehdessä myös minun näkemykseni otetaan huomioon**

Vahvasti eri mieltä

Eri mieltä

Neutraali

Samaa mieltä

Vahvasti samaa mieltä

**18. Voin luottaa kollegoihini**

Vahvasti eri mieltä

Eri mieltä

Neutraali

Samaa mieltä

Vahvasti samaa mieltä

**19. Voin luottaa, että kollegani pitävät minkä lupaavat**

Vahvasti eri mieltä

Eri mieltä

Neutraali

Samaa mieltä

Vahvasti samaa mieltä

**20. Luotan, että kollegani auttavat työllään organisaatiotamme menestymään**

Vahvasti eri mieltä

Eri mieltä

Neutraali

Samaa mieltä

Vahvasti samaa mieltä

**21. Luotan, että kollegani myöntävät virheensä**

Vahvasti eri mieltä

Eri mieltä

Neutraali

Samaa mieltä

Vahvasti samaa mieltä

**22. Luotan, että kollegoilleni on tärkeää, että organisaatiomme menestyy tu-  
levaisuudessa**

Vahvasti eri mieltä

Eri mieltä

Neutraali

Samaa mieltä

Vahvasti samaa mieltä

**23. Luotan, että kollegani laittavat organisaatiomme edun oman etunsa  
edelle**

Vahvasti eri mieltä

Eri mieltä

Neutraali

Samaa mieltä

Vahvasti samaa mieltä

**24. Luotan, että kollegani ovat rehellisiä ottaessaan kantaa asioihin**

Vahvasti eri mieltä

Eri mieltä

Neutraali

Samaa mieltä

Vahvasti samaa mieltä

**25. Kollegani kertovat totuuden, vaikka kertomatta jättämällä pääsisi hel-  
pommalla**

Vahvasti eri mieltä

Eri mieltä

Neutraali

Samaa mieltä

Vahvasti samaa mieltä

**26. Olen varma siitä, mitkä ovat oman toimivaltani rajat työssäni. Toisin sa-  
noen tiedän, mitä päätöksiä voin tehdä itsenäisesti**

Vahvasti eri mieltä

Eri mieltä

Neutraali

Samaa mieltä

Vahvasti samaa mieltä

**27. Työnkuvani sisältää selkeät tavoitteet ja olen tietoinen päämääristä, joita minun on työssäni tarkoitus saavuttaa**

Vahvasti eri mieltä

Eri mieltä

Neutraali

Samaa mieltä

Vahvasti samaa mieltä

**28. Tiedän, mikä on työtehtävieni tärkeysjärjestys ja jaan ajankäyttöni sen mukaisesti**

Vahvasti eri mieltä

Eri mieltä

Neutraali

Samaa mieltä

Vahvasti samaa mieltä

**29. Tiedän, mitkä ovat velvollisuuteni toimenkuvaani liittyen**

Vahvasti eri mieltä

Eri mieltä

Neutraali

Samaa mieltä

Vahvasti samaa mieltä

**30. Tiedän täsmälleen, mitä työnantaja minulta odottaa**

Vahvasti eri mieltä

Eri mieltä

Neutraali

Samaa mieltä

Vahvasti samaa mieltä

**31. Tiedän, minkälaista työsuoritusta tai työkokonaisuutta minulta kulloinkin odotetaan**

Vahvasti eri mieltä

Eri mieltä

Neutraali

Samaa mieltä

Vahvasti samaa mieltä

**32. Yleisesti ottaen, projektit ja hankkeet valmistuvat aikataulussa**

Vahvasti eri mieltä

Eri mieltä

Neutraali

Samaa mieltä

Vahvasti samaa mieltä

**33. Mikäli projektien / hankkeiden aikataulut venyvät, ne venyvät vain hie-**  
**man**

Vahvasti eri mieltä

Eri mieltä

Neutraali

Samaa mieltä

Vahvasti samaa mieltä

**34. Projektien ja hankkeiden resurssien käyttö pysyy suunnitelluissa raa-**  
**meissa (resursseihin kuuluu myös oman organisaation työntekijöiden käyt-**  
**tämä työaika)**

Vahvasti eri mieltä

Eri mieltä

Neutraali

Samaa mieltä

Vahvasti samaa mieltä

**35. Resurssien käytön seuranta projektien ja hankkeiden toteutusvaiheessa**  
**on paikkansa pitävää ja tehokasta**

Vahvasti eri mieltä

Eri mieltä

Neutraali

Samaa mieltä

Vahvasti samaa mieltä

**36. Aktiivisilla toimilla pyritään varmistamaan, että projektit ja hankkeet eivät**  
**sisällä merkittäviä puutteita**

Vahvasti eri mieltä

Eri mieltä

Neutraali

Samaa mieltä

Vahvasti samaa mieltä

**37. Projekteihin / hankkeisiin käytetyillä resursseilla saadaan hyvin vastinetta**

Vahvasti eri mieltä

Eri mieltä

Neutraali

Samaa mieltä

Vahvasti samaa mieltä

**38. Projektien ja hankkeiden lopputuotteiden laatu on riittävän hyvää**

Vahvasti eri mieltä

Eri mieltä

Neutraali

Samaa mieltä

Vahvasti samaa mieltä

**39. Palautteen perusteella projektien / hankkeiden lopputuloksena syntyvien**  
**tuotosten loppukäyttäjät ovat tyytyväisiä**

Vahvasti eri mieltä

Eri mieltä

Neutraali

Samaa mieltä

Vahvasti samaa mieltä

**40. Lopuksi: Sana on vapaa! Kerro vapaasti, mitkä ovat työyksikkösi vahvuudet ja heikkoudet projektityöhön liittyen?**

## **QUESTIONNAIRE IN SWEDISH**

### **Förtroende, kommunikation och tydlighet i roller i projektarbete**

#### **1. Vilket resultatområde arbetar du inom?**

Planläggningen

Fastighetsektorn

Kommunteknik

Vasa vatten

Miljöavdelningen

Byggnadstillsynen

Hussektor

#### **2. Nämn två av de viktigaste ansvarsområdena i din arbetsbeskrivning (även ett räcker om det täcker de viktigaste ansvarsområdena i arbetsbeskrivningen)**

Beroende på antalet svar grupperas och kombineras ansvarsområden under svarens bearbetningsfas. Inga individuella ansvarsområden publiceras separat.

#### **3. Är du förman?**

Ja

Nej

Beroende på antalet enkätsvar kan resultatet bearbetas genom att gruppera svarandena baserat på deras chefsposition.

#### **4. Hur länge har du arbetat i din nuvarande roll?**

0-5 år

5-10 år

11-15 år

16-20 år

21+ år

#### **5. Vilken typ av projekt (arbetshelhet) arbetar du med? (T.ex. Interna utvecklingsprojekt, olika planeringsprojekt såsom byggande av gata eller annan infrastruktur, utarbetande av detalj- eller generalplaner eller tillhörande utredningar, byggnads- och reparationsprojekt, införande av nya datasystem osv.)**

#### **6. Svarandes kön**

Man

Kvinna



**7. Svarandes ålder**

20-29 år

30-39 år

40-49 år

50-59 år

60 + år

**8. Alla som är involverade i projektet deltar aktivt**

Starkt av annan åsikt

Av annan åsikt

Neutral

Av samma åsikt

Starkt av samma åsikt

OBS! Eftersom användningen av projekterminologi inom stadsmiljösektorn varierar, avses här med projekt vilken typ som helst av arbetshelhet som har en tidtabell, mål och resurser.

**9. Alla har möjlighet att säga sin åsikt**

Starkt av annan åsikt

Av annan åsikt

Neutral

Av samma åsikt

Starkt av samma åsikt

**10. Under projektets gång lyssnar man på alla deltagares åsikter**

Starkt av annan åsikt

Av annan åsikt

Neutral

Av samma åsikt

Starkt av samma åsikt

**11. Vår arbetsgemenskap har en atmosfär där medlemmarna fritt kan ge varandra positiv och vid behov negativ respons**

Starkt av annan åsikt

Av annan åsikt

Neutral

Av samma åsikt

Starkt av samma åsikt

**12. Även om vi inte alltid skulle nå fullständigt samförstånd i vår arbetsgemenskap, uppnår vi ändå ett resultat som är acceptabelt för alla**

Starkt av annan åsikt

Av annan åsikt

Neutral

Av samma åsikt

Starkt av samma åsikt

**13. Personer högre upp i organisationsstrukturen lyssnar på mina åsikter**

Starkt av annan åsikt

Av annan åsikt

Neutral

Av samma åsikt

Starkt av samma åsikt

**14. Personer högre upp i organisationsstrukturen tar hänsyn till mig**

Starkt av annan åsikt

Av annan åsikt

Neutral

Av samma åsikt

Starkt av samma åsikt

**15. Personer högre upp i organisationsstrukturen behandlar mig rättvist och respektfullt**

Starkt av annan åsikt

Av annan åsikt

Neutral

Av samma åsikt

Starkt av samma åsikt

**16. Personer högre upp i organisationsstrukturen tar mina bekymmer på allvar**

Starkt av annan åsikt

Av annan åsikt

Neutral

Av samma åsikt

Starkt av samma åsikt

**17. När beslut fattas beaktas även mina synpunkter**

Starkt av annan åsikt

Av annan åsikt

Neutral

Av samma åsikt

Starkt av samma åsikt

**18. Jag kan lita på mina kolleger**

Starkt av annan åsikt

Av annan åsikt

Neutral

Av samma åsikt

Starkt av samma åsikt

**19. Jag kan lita på att mina kollegor håller vad de lovar**

Starkt av annan åsikt

Av annan åsikt

Neutral

Av samma åsikt

Starkt av samma åsikt

**20. Jag litar på att mina kollegor med sitt arbete hjälper vår organisation att nå framgång**

Starkt av annan åsikt

Av annan åsikt

Neutral

Av samma åsikt

Starkt av samma åsikt

**21. Jag litar på att mina kollegor erkänner sina misstag**

Starkt av annan åsikt

Av annan åsikt

Neutral

Av samma åsikt

Starkt av samma åsikt

**22. Jag litar på att det är viktigt för mina kollegor att vår organisation når framgång i framtiden**

Starkt av annan åsikt

Av annan åsikt

Neutral

Av samma åsikt

Starkt av samma åsikt

**23. Jag litar på att mina kollegor sätter vår organisations intressen före sina egna intressen**

Starkt av annan åsikt

Av annan åsikt

Neutral

Av samma åsikt

Starkt av samma åsikt

**24. Jag litar på att mina kollegor är ärliga när de tar ställning till saker**

Starkt av annan åsikt

Av annan åsikt

Neutral

Av samma åsikt

Starkt av samma åsikt

**25. Mina kollegor i vår organisation berättar sanningen även då de skulle slippa enklare undan om de lät bli**

Starkt av annan åsikt

Av annan åsikt

Neutral

Av samma åsikt

Starkt av samma åsikt

**26. Jag är säker på vilka gränserna för mina befogenheter i mitt arbete är.**

**Med andra ord så vet jag vilka beslut jag kan göra självständigt**

Starkt av annan åsikt

Av annan åsikt

Neutral

Av samma åsikt

Starkt av samma åsikt

**27. Min arbetsbeskrivning innehåller tydliga mål och jag är medveten om de mål som jag förväntas uppnå i mitt arbete**

Starkt av annan åsikt

Av annan åsikt

Neutral

Av samma åsikt

Starkt av samma åsikt

**28. Jag vet prioriteringsordningen för mina arbetsuppgifter och delar min tid därefter**

Starkt av annan åsikt

Av annan åsikt

Neutral

Av samma åsikt

Starkt av samma åsikt

**29. Jag vet vad mitt ansvar är i förhållande till min arbetsbeskrivning**

Starkt av annan åsikt

Av annan åsikt

Neutral

Av samma åsikt

Starkt av samma åsikt

**30. Jag vet exakt vad min arbetsgivare förväntar sig av mig**

Starkt av annan åsikt

Av annan åsikt

Neutral

Av samma åsikt

Starkt av samma åsikt

**31. Jag vet vilken typ av arbetsprestation eller arbetshelhet som förväntas av mig i olika situationer**

Starkt av annan åsikt

Av annan åsikt

Neutral

Av samma åsikt

Starkt av samma åsikt

**32. Generellt sett slutförs projekten enligt tidstabell**

Starkt av annan åsikt

Av annan åsikt

Neutral

Av samma åsikt

Starkt av samma åsikt

**33. Om projektens tidtabell förlängs är det endast lite grann**

Starkt av annan åsikt

Av annan åsikt

Neutral

Av samma åsikt

Starkt av samma åsikt

**34. Projektens resursanvändning håller sig inom den planerade ramen (till resurser hör även den arbetstid som används av personalen i den egna organisationen)**

Starkt av annan åsikt

Av annan åsikt

Neutral

Av samma åsikt

Starkt av samma åsikt

**35. Uppföljningen av resursanvändningen under projektens genomförandefas är äkta och effektiv**

Starkt av annan åsikt

Av annan åsikt

Neutral

Av samma åsikt

Starkt av samma åsikt

**36. Med aktiva åtgärder försöker man säkerställa att projektet inte innehåller betydande brister**

Starkt av annan åsikt

Av annan åsikt

Neutral

Av samma åsikt

Starkt av samma åsikt

**37. De resurser som används i projektet ger bra avkastning**

Starkt av annan åsikt

Av annan åsikt

Neutral

Av samma åsikt

Starkt av samma åsikt

**38. Kvaliteten på projektens sluprodukt är tillräckligt bra**

Starkt av annan åsikt

Av annan åsikt

Neutral

Av samma åsikt

Starkt av samma åsikt

**39. Baserat på feedbacken är slutanvändarna av resultaten från projekten nöjda**

Starkt av annan åsikt

Av annan åsikt

Neutral

Av samma åsikt

Starkt av samma åsikt

**40. Slutligen: Ordet är fritt! Berätta gärna vilka styrkor och svagheter din arbetsenhet har när det gäller projektarbete?**