MASTER'S THESIS

Course code: ORG5010

Name: Dorsa Delaviz

Candidate Number: 2

Exploring Triple Helix Collaboration in a Smart City Mobility Project: An Institutional Logics Perspective

Date: 30 November 2022

Total number of pages: 77

NORD
University

www.nord.no

Preface

This thesis marks the end of my two-year journey in the Master of Science in Global Management program at Nord University. The process of acquiring in-depth knowledge on various managerial, entrepreneurial, and technological perspectives at social, economic and sustainability levels has been both challenging and rewarding. Throughout the course of my studies and projects related to smart cities, I became interested in the topic of smart mobility and saw a potential to write a master thesis that explores triple helix partnerships in a smart city transport project.

This writing of this thesis would not have been possible without the support of many people behind the scenes. First and foremost, I am incredibly grateful for the guidance given by my supervisor, Evgenii Aleksandrov. Your insights, support and constructive feedbacks were beyond expectations and greatly appreciated. Thank you for reading through many not-so-great drafts and being encouraging throughout the writing process. Furthermore, I would like to thank all the informants for their insightful contributions in the interviews, EduSmart project at Nord university for believing in me and collaborating on this master thesis, and all my teachers throughout this master program for providing a rich and thought-provoking educational experience.

This has been a rewarding and enlightening experience. It is my hope that this master thesis will offer interesting and intriguing reading.

Dorsa Delaviz

Bodø, November 2022

Abstract

Smart transport is a key aspect of smart city development and can greatly influence the liveability of cities and urban sustainability. The growing attention around the topic of smart cities and undertaking of smart city related projects, such as new innovative transport solutions, brings together institutions, companies and organizations from various industries and sectors. Each organization has its own goals, beliefs and practices which influences their behaviour and actions with other partners. Previous research on cross-sectoral collaborations has focused primarily on public-private partnerships. But less is known about how more complex collaborative partnerships develop in the context of smart city projects. This thesis sought to cover a gap in the literature to explore how collaborations develop and unfold between public, private, and academic actors.

Particularly, the purpose of this study is to explore how public, private, and academic actors interact under a smart city transport project in a single city context in Norway. The thesis's central research question is: *how do actors in a triple helix partnership from public, private and academic sectors with differing institutional logics collaborate together in a smart city partnership project?* In order to answer this question, I examined the interactions and experiences between the actors to uncover which areas the actors aligned in their collaboration and what factors contributed to creating tensions and challenges in the collaboration.

The theoretical framework applies the institutional logics theory which looks at an organization's goals, practices and cognition that influence its actions and behaviour. The thesis is based on a case study of a smart transport project in a Norwegian city in which actors from local public administration, technology companies and academic institution were involved in two sub-projects for the development of autonomous buses and an environmental dashboard app. Methodologically, I had an opportunity to have an internship working on the smart transport project where I encountered first-hand how public, private, and academic actors work together. The study employed a qualitative research method combining interviews, research diary notes and secondary data which enable for rich capturing of information and data triangulation.

The findings showed a hybridity of logics where the actors institutional logics overlapped in terms of their goals, practices, and cognition. Openness to dialogue, trust between project members, having the right people on teams, and willingness to learn were factors that

contributed to alignments in collaboration. Tensions and challenges were found to have resulted from differences in cognition and practices. Most notably, decision making processes and politics of public administration bodies affected commitment, project budget, and the pace of the project. Although, not all actors experienced this equally as the degree of their exposure to the internal processes of other actors was different. Furthermore, the findings showed that some actors were only involved at certain stages and in certain capacity in the project. Most notable is citizens who were only involved as users for testing and feedback. COVID-19 and regulations governing new technologies were factors that affected the goals and practices of the public and private business actors.

The study illustrates the complexity of multi-actor collaborations in smart city developmental projects. Any partnership project has its challenges and opportunities. But awareness of the interplay of various logics can help actors to better understand one another and how to make the best of all actors' competencies and expertise for successful collaboration.

Table of Contents

List of Figures

List of Tables

1. Introduction

Rising populations, climate change and infrastructure needs have prompted the planning and development of 'smart' cities where new forms of governance and technology improve the citizens' quality of life in areas of social, economic, and environmental sustainability (McKinsey, 2018; Grossi, Meijer, et al., 2020).

The transportation sector is one of the largest producers of global CO2 emissions and emissions are expected to rise as global population grows (IEA , 2020). Smart mobility is a key feature of smart cities enabling the move toward a sustainable and inclusive mobility system that solves the problems of growing urbanisation, pollution and climate change (Munhoz, Dias, Chinelli, Guedes, Neves dos Santos, et al., 2020). Smart mobility plans require the involvement of various stakeholders which opens the door to partnerships (McKinsey, 2018).

Multi-actor partnerships are an important form of collaboration enabling joint knowledge development and knowledge sharing as well as enabling access to resources and capabilities that were previously inaccessible (Broccardo et al., 2019; Viale Pereira et al., 2017). The traditional model of public-private partnership provides a framework for developing smart city projects (Pianezzi et al., 2021). However, achieving the ambitions of smart cities requires the collaboration of various stakeholders as well as citizens (Calzada, 2020; Cardullo et al., 2019; Chang et al., 2020). The reality of partnerships is a complex web of intertwined interactions (Chang et al., 2020). Less attention has been given to how collaborations are affected by each actor's goals, interests, organizational processes, structures, and practices (Pansera et al., 2022). This is a gap where there is minimal evidence examining the complexities of multi-actor collaborations that go beyond the traditional public-private partnership (Pianezzi et al., 2021). This thesis seeks to fill the gap in literature between studies of institutional logics and triple helix partnerships by exploring how institutional logics of actors influence collaborative partnerships in smart city development projects.

The purpose of this study is to examine complexities around multiple actors in smart city initiatives and factors contributing to the success and creation of tensions and challenges in collaborative partnerships such as the triple helix model. The thesis's research question is : *how do actors in a triple helix partnership from public, private and academic sectors with differing institutional logics collaborate together in a smart city partnership project ?* In order to answer this question, the theory of institutional logics (Greenwood et al., 2017;

Ingstrup et al., 2021; Pansera et al., 2022; Thornton et al., 2012) was applied which looks at an organization's goals, practices and cognition that influence its actions and behaviour. The analysis, inspired by Ingstrup et al. (2021) investigated the interactions between the actors to uncover which areas the actors aligned in their collaboration and what factors contributed to creating tensions and challenges in the collaborations.

The research empirically conducted a case study of a smart transport project in a Norwegian city in which actors from the local public administration (county administration and city municipality), private businesses and an academic institution were involved in the project. In addition, through university projects, I had an opportunity to have an internship working on a smart mobility project where I encountered first-hand how public, private, and academic actors work together. thus, the study employed a qualitative research method with triangulation of interviews, my own research diary notes as interventionist scholar and documentary analysis which enable for rich capturing of information. Seven interviews with public administration actors, private businesses and academic actors were conducted. As institutional logics is related to the beliefs, norms and practices of an organization, the choice of interviews as research method seemed appropriate as it allowed for rich capture of data and more in-depth understanding of the nuances taking place when multiple actors work together.

The structure of the thesis is as follows. Chapter two begins by providing background about smart cities and smart mobility for development of sustainable urban areas. I, then discuss how collaborations have moved from public-private partnerships to multi-actor partnerships. Chapter three describes the theoretical lense of institutional logics and what the literature says about the influence of various logics on collaborations. Chapter four presents the choice of research methods and the tools used for data collection and analysis. The project context will be further elaborated in this chapter. Empirical findings are described in the fifth chapter and the following chapter discusses and analyses the findings in relation to previous literature presented and the theoretical framework. The final chapter reflects on practical and theoretical contributions in addition to the study limitations and future research suggestions.

2. Literature Review

2.1 Smart Cities and Smart Mobility

Rising populations, climate change and infrastructure needs have prompted the planning and development of 'smart' cities where new forms of governance and technology improve the citizens' quality of life in areas of social, economic, and environmental sustainability

(McKinsey, 2018 ; Grossi, Meijer, et al., 2020). The wide range of interpretations of the concept of smart city has caused difficulty in establishing a shared definition. Meijer et al. (2016) organize the diversity in approaches on the basis of the three defining feature of smart cities: smart technology, smart people and smart governance. Hollands (2008) highlights the importance of inputs from and interactions between various stakeholders and technology, while Giffinger et al. (2007) identifies six main characteristics of smart cities as: smart mobility, people, economic, governance, living and environment. Although Meijer et al. (2016) caution not to mix smart city features – smart technology, people and governance – with smart city aims (e.g., smart mobility, living and economy).

The aforementioned views demonstrate the various ways in which smart cities have been conceptualized within existing scholarly literature. A comprehensive definition should take into account the various perspectives on smartness, acknowledging it as a gradual process, while considering the structural and cultural nuances present in each perspective and the distinctions between them (Meijer et al., 2016). Meijer et al. (2016, p.398) define a smart city as one with the "ability to attract human capital and to mobilize this human capital in collaborations between the various (organized and individual) actors through the use of information and communication technologies". Therefore, it can be said the concept of smart city encompasses the responsibilities associated with the development of growing cities in order to tackle urban problems, including economic, ecological, social, and humanistic elements.

One of the main features of smart cities is smart mobility (Benevolo et al., 2016; Munhoz et al., 2020; Paiva et al., 2021). Munhoz et al. (2020, p. 4) defines smart mobility as "mobility that uses digital technologies to integrate systems and means of transport that interacts with users, aiming at a sustainable, safe, accessible environment that meets citizens' mobility needs". The mobility of a city is a key factor in providing its citizens with a higher quality of life, promoting sustainability, and increasing its overall attractiveness (Benevolo et al., 2016; Munhoz et al., 2020). Intelligent mobility solutions can offer citizens increased flexibility in their transportation options while also reducing their reliance on private vehicles and encouraging energy-efficiency in mobility (Flügge, 2017). (Munhoz, Dias, Chinelli, Guedes, dos Santos, et al., 2020) states that multimodal mobility (i.e., using different means of transporation within a single trip) can improve the efficiency of transportation for commuters.

Moreover, the implementation of smart mobility solutions enhances the equity of transportation access for commuters, while simultaneously promoting sustainable mobility through the reduction of vehicle usage and ownership. The successful adoption of smart mobility relies heavily on information and communication technologies, wherein intelligent infrastructure is employed to gather, consolidate and manage mobility infrastructure systems and services for a variety of stakeholders and entities (Munhoz et al., 2020; Paiva et al., 2021).

Nevertheless, mobility can also create a multitude of issues, such as traffic congestion, air pollution, and the financial burden of public transport systems, ultimately leading to a decrease in overall quality of life and environmental degradation (Munhoz, Dias, Chinelli, Guedes, dos Santos, et al., 2020). The transportation sector is one of the largest producers of global CO_2 emissions with emissions expected to rise as global population grows (IEA , 2020). Furthermore, the mobility sector has experienced significant transformations due to changes in consumer behavior, advancements in technology, transport policies and regulations, threat of climate change and the impact of the COVID-19 pandemic (McKinsey , 2020). The rising adoption of new smart mobility solutions, such as ridesharing, micromobility, and shared mobility services, offers commuters a range of flexible, multimodal, and cost-effective transport options, with the additional purpose of decreasing the utilization of private vehicles, reducing the carbon footprint, and encouraging sustainable forms of transport (Flügge, 2017; Munhoz et al., 2020).

Various cities across the world are embracing smart mobility initiatives at varied paces in order to facilitate digitalisation, electrification and automation through innovation and collaborative processes (McKinsey , 2018). The impetus to rethink urban transportation systems has been generated by the looming threat of climate change, urbanization, and the need for economic growth. Benevolo et al. (2016) and Munhoz et al. (2020) highlight the importance of mobility for efficient operations and continued development of urban areas. The necessity for transportation that is energy- and cost-efficient is becoming more and more apparent. Urban areas are seeing an increased utilization of electric vehicles, cycling, micromobility, and autonomous buses in an effort to modernize transportation. The implementation of these services can prove to be advantageous for cities, as it has been demonstrated to improve passenger safety, enhance the overall service experience, reduce traffic congestion, and reduce the cost of last-mile transportation (Ainsalu et al., 2018).

To summarize, there is no consensus regarding the components that define a smart city. But, smart mobility is frequently touted as a defining feature of smart cities, as it significantly impacts the quality of life of the citizens. Moreover, pollution, rapid urbanisation and threat of climate change has prompted cities to rethink their transportation systems and move toward more sustainable, environmentally friendly urban mobility. The overhaul of existing transportation infrastructure necessitates the collaboration between various stakeholders across multiple industries and sectors in order to develop and implement new technologies and mobility services (Ainsalu et al., 2018). The following section describes the evolution of collaborations from traditionally public and private actors to involvement of more diverse actors and how this diversity can influence collaborations.

2.2 Traditional forms of Collaborations in Smart City Projects : Public-Private Partnerhsips

Smart mobility initiatives require the involvement of various stakeholders which opens the door to partnerships (McKinsey, 2018). Meijer et al. (2016) posit that governance is one of the key features of smart cities. The authors note four conceptualizations of smart city governance. These are: (1) smart governance that does not require transformation, (2) one that necessitates a shift in decision-making structures, (3) one that necessitates internal organizational restructuring, (4) and one that involves the collaboration of multiple stakeholders (Meijer et al., 2016). It is reasonable to infer that the final approach outlined is the one that is most commonly observed in the development of smart city initiatives and projects, with multiple stakeholders involved. It can be posited that when organizations of varying structures and processes collaborate, there may be a requirement for rethinking decision-making processes and procedures to ensure effective communication and efficient actions. Thus, how various actors with different interests, practices and logics work together deserves further investigation.

Smart mobility is cited to be one of the drivers of smart sustainable cities (Guedes et al., 2018). The move to a smarter transport system requires the participation, interaction, and collaboration of actors from various sectors (Giffinger, et al., 2007) to pool resources and foster innovation (Broccardo et al., 2019; Viale Pereira et al., 2017). The different actors as well as citizens, each with their own particular knowledge, contribute differently to influencing the collaborative dynamics and shaping the governance structures of smart city initiatives (Giffinger et al., 2007; Lombardi et al., 2012; Nam et al., 2014).

5

Traditionally, public-private partnerships (PPPs) have been viewed as neoliberal reforms that tend to prioritize private business interests in city development projects over long term social and economic goals (Grossi et al., 2017). Some research shows that the contractual arrangement of transactional public-private partnerships has resulted in profit-oriented decision making, confusion of responsibilities, fragmentation of control, and inaccurate risk management (Reeves, 2008). Liu et al. (2021) Liu suggest a shift from transactional public-private partnerships to collaborative partnerships is required for smart city projects due to the large sums of investment required for the development of new technologies, and the risk and security issues related to the collection and use of data. Aside from the aforementioned reasons, it is also important to develop a city for the people by the people. Involvement of various types of actors and citizens, while no doubt makes partnerships more complicated, can ensure that the voices, concerns, and needs of the diverse groups of people living in a city are represented and acknolwedged. Although, the issues of which actors to involve, when and at which stage of project to involve and how to effectively involve are areas that require further attention and research.

It is importance to acknowledge and be aware that public-private partnerships are context-dependent, and can be shaped by regional and local history, culture, economic and social conditions (Koppenjan et al., 2018; Pianezzi et al., 2021; Steijn et al., 2011). China is such an example with its centralized model of government that excersizes a strong top-down political and administrative leadership (Appio et al., 2019). In contrast, public-private partnerships in Japanese smart city projects have been found to be characterized by a close knit participatory partnership that is underpinned by political loyalty, obedience, respect for authority, and self-restraint as espoused by the Japanese Samurai value system. Additionally, the moral principles of the country's culture of harmony, conflict avoidance and mutual adjustments are also influential in the context of public-private partnerships (Pianezzi et al., 2021).

The public-private partnership concept has provided a traditional transactional framework for partnerships between private sector and public actors (Grossi et al., 2017). Evidence from previous literature shows that such partnerships are situationally located and affected by local context, location, and cultural norms and factors (Pianezzi, Mori, and Uddin, 2021). As smart city development requires collaboration between more than just public and private actors, there is a need to explore how the addition of more actors affects collaboration as each actor brings its own beliefs, goals, and practices. The following section examines literature to see

what happens when we move from the traditional public-private partnerships to inclusion of more diverse actors and its influence of collaborations.

2.3 Moving on from Public-Private Partnerships : The Triple Helix model of Partnership and the Extended Helixes

Collaboration is key to the realization of smart city initiatives (Meijer et al., 2016). The traditional public-private partnership approach, characterized by contracts and transactional arrangements, may not adequately address the specific challenges of smart city projects (Pansera et al., 2022). The considerable capital investments, long development periods, representation of diverse stakeholders in a city, citizen participation, data collection and data ownership concerns are just a few elements that necessitate a shift from transactional partnerships to a more inclusive collaborative partnership for smart city projects (Liu et al., 2021; Veselitskaya et al., 2019).

To include the diversity of stakeholders that may be part of collaborative partnerships, the public-private partnership approach has been expanded to include other actors. Etzkowitz (2003) the triple helix framework as a means of understanding the interplay between industry, state and academic institutions in the context of open innovation systems. Although Calzada (2020) notes the model of is characterized by an exclusion of citizens and a hierarchical, technocratic approach to decision-making. Expanded frameworks have emerged to include a multiplicity of stakeholders who co-exist in the city and to enhance the shift to a more democracticed city representing the different actors. The quadruple-helix framework includes the citizens, although Calzada (2020) notes that in this framework citizens are reactive but passive, and governance is institutionalized. In a further iteration of the framework, the penta-helix, includes intermediaries, entrepreneurs and activists. In contrast to the quadruple-helix, the citizens' response is proactive and governance is democratized with a bottom-up model of governance (Calzada, 2020).

The mere inclusion of more diverse groups and citizens would result in more participatory involvement and citizen-led form of governance (Calzada, 2020). Although there is a lack of a commonly agreed specific strategy or mechanism for citizen involvement and participation in smart city projects, Calzada (2020)'s opinion is similar to Pianezzi et al. (2021)'s that contextual factors affect how stakeholders interact and collaborate. A study based on the penta-helix framework conducted in three cities in Germany, Turkey, and Switzerland found that there are differences in terms of the mix of stakeholders involved with each group

differing in their degree of influence and proactivity. The study also found that stakeholders in each city have different preferences for business and social models depending on the smart city sector, and that there is a willingness to experiment with new ways of working together (Calzada, 2020).

The Triple Helix and the extended helix frameworks has been applied in the context of smart cities (Appio et al., 2019). Involvement of citizens in the helix framework has been recommended by researchers to be beneficial in the development of smart cities (Carayannis et al., 2018 ; Cardullo et al., 2019; Fung, 2015; Meijer et al., 2016). In the field of smart cities, citizens may be involved through living labs which is a term characterized by the collaboration of different stakeholders to solve urban challenges in real-life settings (Hossain et al., 2019). Schaffers et al. (2011) argue for the use of living labs for smart city development, although, the research does not discuss it as part of a helix model framework but rather a public-private-people partnership. Involvement of citizens in the development of new technologies allows for development of a solution that answers the needs of both users and developers, leading to innovative new ideas. However, one has to be aware of the difference between citizen involvement, which involves citizens testing new technologies for usability and accuracy, and citizen engagement, which refers to when citizens are regarded as co-developers who significantly contribute to the development process. The latter is essential to achieve the goal of a smart city projects which is not to simply test new solutions, but to create them (Schaffers et al., 2011).

Chang et al (2020)'s study of Norwegian municipalities found the quadruple and penta helix to be common among them with citizens and the natural environment being included as the fourth and fifth helixes. The inclusion of the natural environment differs from previous studies (Calzada, 2020) and is based on the assumption that the implementation of sustainable thinking and action will have a positive impact on the society (Chang et al, 2020). A study of multi-actor collaboration for digitalization of infrastructure in Swedish municipalities tensions and challenges arose from a lack of communication, coordination and insufficient organization between municipal departments and administrations (Claesson et al (2019) as cited in Chang et al, 2020). This is similar to Chang (2020)'s case study which showed lack of common infrastrcuture, skepticism to partake in new developmental solutions, balancing provision of holistic solutions and profitability, and municipalities preference for modular solutions due to limited resources to create challenges.

Thus, to summarize the literature, smart city development requires the involvement of different groups of stakeholders and citizens for development and implementation of solutions to urban problems (Calzada, 2020). The realization of smart city initiatives depends on smart governance and forming new ways of collaboration. Much research recommends the inclusion of various stakeholders to be beneficial in the development of smart city projects. The reality of partnerships is a complex web intertwined interactions (Chang et al., 2020). Less attention has been given on how collaborations are affected by each actor's goals, interests, organizational processes, structures and practices. This is a gap where there is minimal evidence on how collaboration partnerships between multiple actors with different logics unfold in the context of smart city development. In order to cover this gap, this thesis will explore how institutional logics of actors influence collaborative partnerships. The following section presents the thesis's theoretical framework that will help in the process of answering the research question.

3. Theoretical Background

This study explores how collaborative partnerships between public, private, and academic actors in a smart city mobility project unfold. The theory of institutional logics has been used to form the research model. The following section presents the relevance of the theory to the research, the type of logics present in partnerships and how logics influence actors' interactions. An overview of the research model is presented at the end of the chapter and how it will be used to collected data.

3.1. Institutional Logics

Developing smart cities to solve urban issues requires the involvement of different actors. The ways in which projects are developed and the roles of their various stakeholders can vary significantly. A deeper comprehension of the social structure of a smart city, and the manner in which the participants interact, can be gained by studying the interplay of the respective institutional logics of the actors within the partnership framework. (Pansera et al., 2022).

Institutional logic refers to the "the socially constructed, historical patterns of cultural symbols and material practices, assumptions, values, and beliefs by which individuals produce and reproduce their material subsistence, organize time and space, and provide meaning to their daily activity" (Thornton and Ocasio (1999, p.804) as cited in Greenwood et al., 2017). It shapes, regulates and legitimates organizational and individual belief systems, norms, behaviour, goals, and practices (Ocasio et al., 2017; Pansera et al., 2022; Reay et al.,

2009). Logics can operate at different levels of organizational level, field level (in this instance at the smart city development level) and broader societal level (Pansera et al., 2022). The concept helps to analyse the interrelationships between individuals, organizations and institutions (Greenwood et al., 2017). To understand individual and organizational behaviour, one has to look at institutional logic in a local, cultural, and institutional context as it is the institutional context that influences behaviour and provides opportunity for agency and change. The core assumption of the institutional logics approach is that the interests, identities, values, and assumptions of individuals and organizations are embedded within prevailing institutional logics (Greenwood et al., 2008). It must be noted that institutional logics change and evolve over time as institutions change (Ingstrup et al., 2021).

(Ocasio et al., 2017) identify seven types of logics: the state, market, corporation, community, family, corporation, and religion. While these are considered societal level logics, a systematic literature review of the institutional logic literature by Cai et al. (2022) identified 18 field level logics. There is a lack of agreement on the ideal types of field level logics and some logics share similar assumptions even though they have different names. For example, Grossi et al. (2020) consider business logic to be the same as managerial logic. The variety in the number of logics identified and the lack of rigour in defining each logic may result in a 'concept misinformation' problem (Cai et al., 2022). For the purposes of this research, I will review four logics relevant to the case study in the context of a smart city mobility collaboration partnership. These are the state logic, academic logic, community logic, and business logic.

The academic logic posits that academic institutions' goal is increasing scholarly and public knowledge as well as maintaining reputation among academic peers (Greenwood et al., 2008). This logic is characterized by impartiality and autonomy in research (as there is no central control) and the nature of the research activities. Professional seniority and collegial principles govern authority, while decisions are reached by consensus (Grossi, Dobija, et al., 2020). The academic logic is influenced by academic networks that build on peer evaluation of research based on voluntary knowledge sharing and participation in research studies. Universities have historically valued research for its contributions to the advancement of public knowledge, rather than as a means for commercial exploitation of research findings (Lind et al., 2013). Moreover, given the dependence of academic institutions on public funding, there are considerable incentives for universities to engage in cross-sector

collaborative partnerships as demonstrating participation and good results can facilitate access to future government research funding and grants (Lind et al., 2013).

Lundberg et al. (2012) states that academic institutions contribute to knowledge development and innovativeness in three main ways; through partnerships research projects, publications, and educating students who are the future workforce. Therefore, innovativeness is dependent on the interactions and cooperation between different actors, even if their motives for entering a partnership is different. Divergent motivations and contrasting institutional logics to business and government actors, particularly in case of research project partnerships, can be a source of obstacles that the actors need to overcome. In particular, the academic logic purposes that researchers publicize their research findings allowing for peer evaluation and knowledge sharing, while government and private business actors may be less forthcoming to maintain competitive advantage and commercial confidentiality (Lundberg et al., 2012).

The state logic is to increase community good and citizen well-being and democratic participation (Greenwood et al., 2008; Saz-Carranza et al., 2012). The state logic is characterized by bureaucracy, hierarchy, standardization, performance management systems, effectiveness and efficiency concerns, delivery of results, and maximization of the short-term value of money (Arellano-Gault et al., 2013; Pansera et al., 2022; Pollitt et al., 2017). The extent to which governments and public administration bodies embody the aforementioned characteristics of state logic can vary depending on locational, situational context (Pansera et al., 2022). The state logic can be in significant play when a public organization is heavily involved in smart city project. The broader socio-political environment can also influence the state logic by, for example, maintaining the decision-making power with the political or organizational actor to maintain more top-down control (Schmidt et al., 2021).

Kornberger et al. (2017) exploring open data government in Vienna, Austria found that the goals of open government (e.g., citizen participation and crowdsourcing) conflict with the state logic of public administration. The authors argue that the state logic, with its emphasis on centralized control and standardization, limits the potential of open government and reduces its benefits. In a similar vein, Pansera et al. (2022) investigating the role of citizens in smart city development in Mexico City found that state logic limited citizen participation. Although, there was a move to a single helix where government was the sole lead actor in smart city development. The authors suggest the reason for this is that the governance

structure of the state logic in Mexico City is based on clientelism, characterized by informal networks of patronage and power (Pansera et al., 2022).

The business logic is based on profit maximisation and firm growth through offering products and services that increase the firm size. Board of directors and management is the source of authority and control (Greenwood et al., 2008). The institutional logic of private business actors influences their motivations and interests in joint partnership projects which shapes their willingness to participate in research endeavours, including the degree of openness they exhibit in the collaborations they enter into (Lind et al., 2013). Collaborative partnerships in developmental projects is beneficial for companies as it gives them access to complementary knowledge, resources and competencies, reduces risks associated with introduction of new products/services to market (Lundberg et al., 2012).

Actors may have similar goals and motives for entering a partnership as well as motives that operate in parallel to one another. Differences in goals may be related to knowledge development, firm growth, commercialisation of product/service offering, planning timeframes, or leveraging academic knowledge against gaining access to industrial and government contacts (Lind et al., 2013). Such differences in institutional logics of the actors can amplify the complexities of interactions and collaborations. Lundberg et al. (2012) exemplifies this point by saying that different in practices and cognition of public, private, and academic actors can have adverse effects on communications as actors may be uncertain about what can be expected from the other in terms of contributions. In a similar vein, a study looking at the development of an electronic prescription system in Finland found that competing logics of business and public healthcare actors needed to change in terms of commitment and practices to solve a societal problem of medication error and abuse (Jakkola et al (2019) cited in Ingstrup et al., 2021).

The community driven logic emphasizes citizen participation in development, testing, implementation, and governance of smart city initiatives. This logic is citizen-oriented and citizen-led and demands more active and inclusive mechanisms of engagement (Pansera et al., 2022). According to (Datta, 2018), the state and business logics embedded in smart city initiatives may lead to the commodification of access to data, ultimately limiting citizens' involvement and creating a potential risk of overreliance on the proprietary products, objectives, and motivations of private businesses.

(Mora et al., 2019) suggest that the quadruple helix model of smart city development – incorporating as the fourth helix – is a potential solution to this problem. Despite being portrayed as a framework that enhances democratic, this approach has been criticized to do little to address issues presented by the state and business logics and for potentially depoliticizing urban governance (Grossi et al., 2017; Hollands, 2015; Pansera et al., 2022).

Joss et al. (2019) and March et al. (2016) highlight the importance of citizens having greater involvement and control in the process of creating smart cities through more direct means. Advocating for the increased utilization of open-source data, open science practices, non-proprietary software, and the leveraging of collective resources is proposed (Balestrini et al (2017) as cited in Pansera et al., 2022). The development of a smart city is not only a technological endeavour, but also a political undertaking. A smart city is not necessarily indicative of greater fairness in the distribution of public services nor is it necessarily indicative of an improved standard of living for citizens. It has the potential to further exacerbate existing disparities, create power imbalances, and widen social inequalities (Cardullo et al., 2019).

Reflecting on interaction of presented four different institutional logics, it is important to consider several challenges for smart city development in general and smart transport collaboration in particular under various modes of interaction. Pansera et al. (2022) states a significant group of smart city scholars, companies and consulting groups have a business logic which is underpinned by techno-optimism. This view holds that resolution of urban issues requires a strategic partnership between academic institutions and private sector, which supply infrastructure, capital and skill, and local governments, who serve as facilitators and are established to administer governance and democratic representation. This triple helix embeds the efficiency concerns of state and business logics (Mora et al., 2019) where governments can procure read-made, off-the-shelf technological solutions from private sector to implement on behalf of the city (Grossi et al., 2017; Pansera et al., 2022). Private sector actors partner to modify pre-existing products to fit the local context, or to create solutions that can be sold in other cities. This type of collaboration shifts the focus from a bureaucratic adherence to procedure to one that concentrates on the outcomes and consequences (Pansera et al., 2022). Agger et al. (2018) emphasize the necessity of harmonizing the interests of the state and businesses. The double helix models of partnership attempt to achieve varying levels of success. Other helical models of collaboration (i.e., triple and quadruple) necessitate more expansive engagement by engaging a wider array of stakeholders. To date, the double helix

approach to smart city development has been the dominant model; it is a top-down strategy that is initiated by local government and corporate entities in partnership (Pansera et al., 2022).

Thus, the new modes of collaborations beyond PPPs open up much complexity to consider when multiple actors with various underlying logics are involved in smart city initiatives. I capture these complexities as a process of hybridization or hybridity formation that is presented below.

3.2 Hybridity of Logics in Collaborative Partnerships

Multi-actor partnerships are a form of hybrid collaboration bringing together public and private, and academic actors with varied goals, cognition, and practices. Given the complex, multifaceted and multi-level dynamics in such partnerships, research calls for better understanding of the influence of logics on collaborations (Quélin et al., 2017). Furthermore, actors often have different objectives which necessitates further exploration into understanding the underlying hybrid nature and influence of logics on collaborations (Ingstrup et al., 2021).

Hybridity in logics refers to "*mixed and potentially divergent institutional patterns influencing beliefs and norms of action in organizations*"(Quélin et al., 2017, p.768). Meyer et al. (2010, p.1251) argue logics interact in different ways; "logics may peacefully co-exist, compete with one another, supersede each other, provide an opportunity for blending or hybridization, or result in a compromise or temporary co-existence". Furthermore, Perkmann et al. (2019) distinguish between two types of hybridity in organizational logics: blended hybrids, where different logics are combined; and structural hybrids, where different logics dominate different within departments within an organization. Other authors (Corsaro et al., 2011a; Ingstrup et al., 2021) make a distinction between three types of alignment or misalignment that can occur from logics hybridity resulting in synergies or tensions. First, goals alignment refers to the degree of consistency between actors' goals. Alignment in cognition refers to the extent actors' beliefs and perceptions unite. And third, alignment in practices concerns the extent to which the actors' organizational processes and competencies fit one another. Organizations with a distinct institutional logic might face tensions or challenges in addressing project objectives as each actor operates under different values, norms and practices in a partnership (Ebrahim et al., 2014).

The interplay of institutional logics of different actors has mostly been studied in public-private partnership settings (Albats et al., 2022; Ashraf et al., 2017; Saz-Carranza et al., 2012). Albats et al. (2022) studied university-industry collaborations, while (Saz-Carranza et al., 2012) examined logics in public-private joint ventures. A study by Ashraf et al. (2017) in the carbon offset market observed that actors in cross-sector partnerships encounter tensions in coping with differing institutional logic of their partners, putting pressure on and raising questions about the sustainability of the partnership over time. The authors suggested that the challenges posed by incompatible logics of actors could be mitigated by the degree of resource interdependence between organizations.

The fact that participation is voluntary in the project could also mean that hybridity in logics would be less of a problem, as all partners would be choosing to work with actors from different sectors (Ashraf et al., 2017). The study by Saz-Carranza et al. (2012) on public-private joint ventures found that challenges posed by competing logics were overcome by involving and communicating with stakeholders. This facilitated interaction among members and partners, built trust and encouraged joint-learning. A study by (Ahmadsimab et al., 2021) investigating firms and non-profit organization partnerships found that tensions arising from competing logics are managed through three strategies: negotiating scope of activity, monitoring and learning, and modifying organizational practices. Zhang (2022) exploring inter-firm collaborations between Chinese small and medium sized enterprises (SMEs) in the context of developing institutional logics found that government-backed broker firms encouraged the development of collaboration among SMEs. Here, brokers can be either individuals or formal organizations such as government-supported incubators.This has implications for smaller technology-based business actors wanting to be involved, for instance in smart city development project, but whose product/service is novel and is not backed by much practical data.

Engagement of actors that share similar goals, beliefs, and practices can facilitate the building of trust as their shared principles provide a basis for building collaboration (Albats et al., 2022). Trust is an essential component in knowledge transfer (Albats et al., 2022). Corsaro et al. (2011) argue that for trust to be built between actors, there has to be alignment in cognition and perceptions of the partners to encourage knowledge sharing and communication. Inter-organizational complexities can make trust building more complicated. This could, for example, be the different research agendas within a given academic institution, including curiosity-driven research, impact agenda research, and entrepreneurial-driven research. These

agendas can sometimes conflict with each other, making it difficult to pursue all of them simultaneously (Albats et al., 2022).

Findings from studies suggest that interplay of different logics can result in competing or hybridity of logics leading to both positive and negative effects. Some studies associate multiple institutional logics with conflict, and others say that it increases innovativeness (Pansera et al., 2022; Schulz et al., 2020). Villani et al. (2017) studying value creation in Italian healthcare sector found that in complex interorganizational partnerships marked by both logic and governance hybridity, factors such as governance structures, core assets, competencies, and task distribution may lead to greater value generation. A study by Schulz et al. (2020) analysing service ecosystems for intermodal mobility in Germany found that competing logics can negatively affect service provision in intermodal mobility. In particular, the state logic of the actors, characterized by an obligation to provide public transport, negatively affected the platforms' quality of service in providing intermodal mobility to commuters. The results also showed that the community logic of providing affordable mobility through various distribution channels for all citizens contradicts the service logic which increases the technical complexity of the mobility solution (Schulz et al., 2020). In line with these findings, (Pansera et al. (2022) investigating the role of citizens in smart city development in Mexico City found that state bureaucratic and technocratic logics limited citizen participation. Surprisingly, there was a move to a single helix where government was the sole lead actor in smart city development. The authors suggest the reason for this is that the governance structure in the case study is based on a clientelism-based logic, characterized by informal networks of patronage and power (Pansera et al., 2022).

The concept of logics hybridity reflects the fact that competing institutional logics can co-exist, with the underlying logics unifying in their goals, interests and actions (Albats et al., 2022). Ingstrup et al. (2021) illustrates this through their study of academic, industry and government actors collaborating in a circular economy cluster in Finland. The hybridity of different logics resulted in both synergies and tensions in the collaboration process. The authors found that mismatches in collaborative practices can lead to intentional adjustments that have positive effects. This shows that institutional logics are modified throughout the collaboration process to reach the overarching goals of the partnership (Öberg et al., 2014). The dynamics of logics hybridity helps to explain how alignments and tensions emerge as a result of shifts in shared goals, practices, and priorities (Ingstrup et al., 2021). A study by Lundberg et al. (2012) examining collaboration between businesses, governments and

universities in a Swedish context found that resources sharing increased the potential for innovations. The study identified that cooperation allowed for entry of two other types of actors: financiers and independent cooperation facilitators that provided additional resources. The authors noted shared goals, personal qualities of people involved, and social capital are of significant value in triple helix partnerships.

In summary, research on institutional logics has mostly focused on the perspective of one type of actor or public-private partnerships (Albats et al., 2022; Ashraf et al., 2017; Saz-Carranza et al., 2012). Actors in cross-sector partnerships share resources, knowledge, competencies. this raises the question of how actors whose goals, actions and behaviour are guided by different institutional logics cooperate with one another. Studies of institutional logics between pubic, private and academic actors are limited and mostly present the positive aspects of the diversity of actors (Ingstrup et al., 2021). There has been limited attention on how the interplay of different institutional logics can result in synergies and tensions in collaborations in smart city development setting (Pansera et al., 2022). This has practical relevance since smart city developments require involvement and participation of various actors, each with their own institutional logic, interacting with multiple layers of organizational actors with distinct organizational structures, decision making procedures and processes, and varying goals. This research aims to fill a research gap to gain an in-depth understanding of how collaborations among public-private-academic actors, each with their own institutional logic, develop in the context of a smart city transport project. Below, the theoretical framework is presented which will help in the process of answering the research question.

3.3 Analytical Framework

This study will focus on a public-private-academic partnership in a smart city mobility project in a Norwegian city. The purpose of this thesis is to examine complexities around multiple actors in smart city initiatives and factors contributing to the success and creation of tensions and challenges in collaborative partnerships such as the triple helix model. The thesis's research question is *how do actors in a triple helix partnership from public, private and academic sectors with differing institutional logics collaborate together in a smart city partnership project?* In order to answer this question, I examined the interactions and experiences between the actors to uncover which areas the actors aligned in their collaboration and what factors contributed to creating tensions and challenges in the

collaboration. To address the research question, the theory of institutional logics is applied to develop an analytical framework (figure 1).

The presence of different actors each with their own institutional logics forms a complex web of intertwined interactions. Furthermore, actors can have more than one logic influencing their goals, practices, and cognition. The embeddedness of various logics may result in hybridization in logics which can create synergies and tensions in interactions between the actors.

Figure 1: Analytical Framework
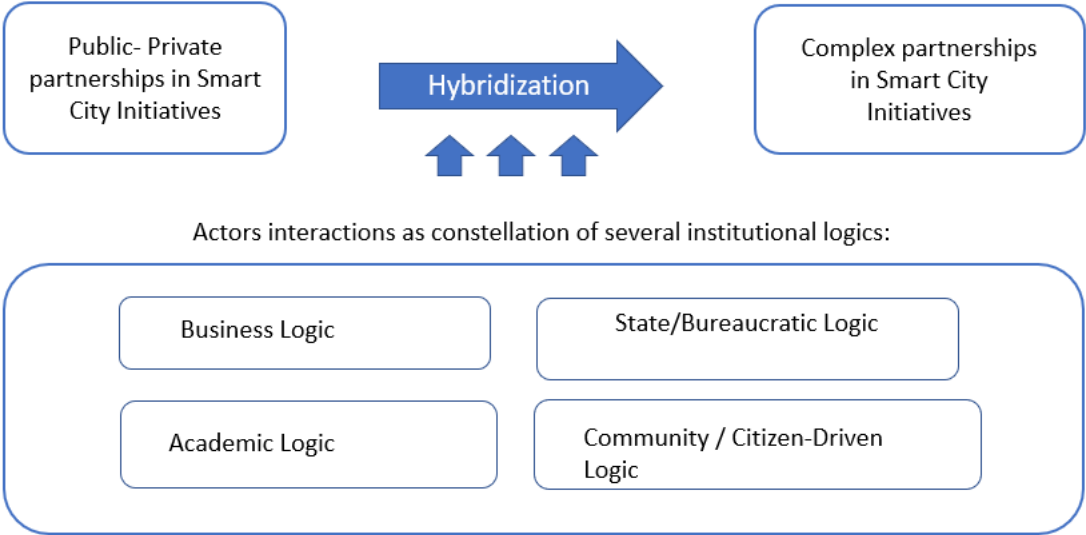
4. Research Methodology

Researchers in management and social sciences are concerned with the study of people and the meanings they attach to events and phenomena around them through their opinions, experiences and perceptions. These opinions and perceptions, in turn, shape their behaviour and actions. As social actors, people's world view is influenced by their individual subjective experiences and informs the social reality of the world(Saunders et al., 2009).

When developing a research, there are important considerations which shape the paradigm or belief system that will guide the research. The reseach philosophy, including ontology and

epistemology, contain the researcher's assumptions about the way in which they view the world. These assumptions influence the choice of research strategy and method and are, thus, an important consideration as it affects the researcher's view of reality. The choice of the researcher's worldview will, in turn, influence the theoretical lens one adopts and uses throughout the research. Subsequently, the theoretical stance influences the methodological approach which consequntly determines the strategy for data collection and analysis (Saunders et al., 2009). In the following sections, the rationale for the philosophical assumptions and choice of research methods and strategy will be discussed.

4.1. Philosophy of Science

The researcher's assumptions, values and perceptions influence their worldview and are linked to epistemology and ontology. The researcher has an obligation to understand and be aware of how their own perceptions and assumptions might affect the research. The following sections elaborate on the ontological and epistemological view of the research (Easterby-Smith et al., 2015).

4.1.1. Ontology and Epistemology

Ontology is related to philosophical assumptions about the nature of reality (Easterby-Smith et al., 2015). This raises questions about the researcher's perceptions of how the world works. The main aspects of ontology deal with questions of objectivism and subjectivism. That is whether social entities exist independent of social actors or whether the perceptions and actions of social actors creates social entities (Saunders et al., 2009). Easterby-Smith et al., (2015) posits there are four different ontologies within social sciences, each with its own perception of truth and fact. The four main ontological stances are realism, internal realism, relativism, and nominalism.

Realism posits that the physical and social world exist independently of beliefs or knowledge of their existence. It stipulates there is a single truth, and it is observed through credible data and facts (Easterby-Smith et al., 2015; Saunders et al., 2009). Internal realism assumes that reality exists independent of the researcher but is obscure and can be difficult to agree on their meaning or ways of measuring them. Regardless, facts and the reality of their consequences are concrete, but not possible to access directly (Easterby-Smith et al., 2015). The third ontological position, relativism, posits that different phenomena are experienced differently by people. And thus, there is no single reality, but rather many truths and facts (Easterby-Smith et al., 2015). Lastly, nominalism goes further than relativism by assuming that there is

19

no truth and facts which are observed are all products of human language and discourse (Easterby-Smith et al., 2015).

In this research, the focus is on understanding the logics of actors in collaborative agreements and the research is centred around the various logics which affect these partnerships. These logics influence the beliefs and actions of individuals in organizations. The mix of institutional logics can potentially be diverging or positive for the partnership. As such, the research does not assume a realist or internal realist approach, but rather assumes a relativist ontological position as the aim of the research is to explore the reasons of how institutional logics affect partnerships.

Epistemology is concerned with how knowledge of the social and physical world is obtained. In other words, how do we know what we know (Easterby-Smith et al., 2015). Its emphasis is on investigating the origin, restrictions, validity, and likelihood of knowledge. When conducting research, it is important to keep in mind three critical questions: does the phenomena under investigation exist objectively or only in people's subjective thoughts and opinions? how can we be certain that anything is true? and what is the foundation forming our knowledge? Easterby-Smith et al., (2015) posits social science research is conducted through either a positivist or a social constructionist position.

Positivism stipulates that the social world exists externally, and its elements should be assessed objectively rather than subjectively through reflection or intuition (Easterby-Smith et al., 2015). On the other hand, social constructivism posits that reality is socially constructed and places emphasis on the role of people as social actors. Hence, this approach attempts to understand and draw on the subjective meanings and social phenomena in order to gain better understanding (Easterby-Smith et al., 2015). Furthermore, Saunders et al., (2009) argue that relativism gives an epistemological position since observations from multiple perspectives will be more accurate.

It is important to note the contrasting implications of these two positions. The positivist researcher should remain independent and human interests are not relevant for them. Deductive research is undertaken using hypothesis so that concepts can be measured, and causality demonstrated. Sampling requires a large number of randomly selective population and generalizations are made through statistical probability (Easterby-Smith et al., 2015). The social constructionist researcher is part of the observation and human interests are relevant and the main driver of the research. Here, the goal is to increase general understanding of the

situation by incorporating different stakeholder perspectives and gathering rich data. Sampling is done by choosing small, selective cases for specific reasons and generalizations are made through theoretical abstractions (Easterby-Smith et al., 2015).

For this research, the institutional logics in collaborative partnerships have a subjective existence and the researcher is part of what is being observed similar to social constructionism. In other words, I see the conducted research as an interpretive one where I cannot detach myself from data collection and analysis, as those become subjective. Thus, I position myself in a social constructionist approach by using research question, a case study, research diary and interviews to acquire primary data. It must be noted that the understanding of these realities and their veracity is restricted to the information available at the time and the data gathered. Therefore, it is important to gather diverse viewpoints through triangulation and comparison of data as well as the perceptions and experiences of varied people and researchers (Easterby-Smith et al., 2015).

4.2. Qualitative Research Method

The choice of the research methodology to gather data supports the aim of the research and clears a specific path toward finding answers by defining how data will be gathered, processed, and analysed. In social sciences, qualitative and quantitative methods are used to identify and differentiate data collection and data analysis techniques and procedures (Saunders et al., 2009). A qualitative approach is more descriptive and explorative in nature and allows for a richer capture of data, while a quantitative approach is more numerical in nature and captures data on a larger scale through statistical techniques.

The aim of the qualitative method is to provide a more in-depth understanding of the phenomenon that is being studied. For this research, the aim is to understand in detail the logics and perceptions of actors in a smart transport project partnership. For this reason, I deemed it appropriate to perform a case study (Saunders et al., 2009) for collecting qualitative data. Qualitative researchers often work inductively when moving between themes and the database, continuing until the researcher has developed a comprehensive set of themes. The researcher next uses deductive reasoning to examine the data from the themes to determine whether further evidence may support each theme or if additional material is needed. This research employed both inductive and deductive reasoning in its research process and analysis. Inductive reasoning was used to begin the research process, while deductive

reasoning was employed to further analyse the data, i.e., generating abductive reasoning (Easterby-Smith et al., 2015).

4.3. Research Design

Research design refers to the overall strategy that integrates the different components for collecting, analysing, interpreting and reporting data in a coherent way in a research study. Case studies, ethnography, narrative research, grounded theory and phenomenological research are the most widely referenced forms of research design (Easterby-Smith et al., 2015). These five methodologies are similar in structure and data gathering processes, but differ in areas of unit of analysis, and data analysis methodology.

During the consideration for the choice of research design, I considered how to best link the research question to the data collected. The case study approach to qualitative research was appropriate as it allowed for a richer understanding of the research aim within a real-life setting and incorporating different sources of information such as interviews and research diary notes. Moreover, this strategy helped to answer the "how" of the research question as the research problem requires a more in-depth analysis of the research phenomena. A distinction has to be made between the choice of single or multiple case studies, and holistic or embedded case studies (Saunders et al., 2009).

In the context of this research, the case that is studied is a partnership agreement for research and development between the regional public administration bodies (county administration and city municipality), a university as the research partner and two private business companies. The research informants are the actors involved in this project. The reason for the selection of this case is to examine the actors' logics and perceptions. Thus, this thesis is designed as a single embedded case study.

Therefore, the presented case becomes interesting for investigation as actors from public, private, and academic sectors, each with their own institutional logic, collaborate together. It is fruitful to explore how complex multi-actor interactions develop in the context of a smart city transport project.

4.4. Case Study in a Norwegian City

A long term objective of the transport sector in Norway is to have efficient, safe and sustainable transportation system in the country. One of the policy objectives of the National Transport Plan 2022-2033 is the development and implementation of new technologies for a smart and green transport system and mobility services that are accessible, safe, and

environmentally friendly. The strategy emphasizes the importance of research, development, piloting and innovation in collaboration with academic and industry (Norwegian Ministry of Transport, n.d.). As a result, various mobility pilot projects have started to develop in different cities in Norway.

One such project is the case study for this thesis. The smart transport project is a collaborative project between local public administration bodies, academic institution and prive business actors. The project has several sub-projects pursuing development in different areas of the transport system. Two sub-projects are the focus of this study.

The first sub-project is a joint collaboration between the county administration, the university as research partner, and a private business firm for the development of an environmental dashboard app that aims to inform citizens of the environmental impact of their travel habits as well as raising awareness and engaging the public to choose more environmentally friendly methods of transport. The app is designed to give the user an overview of their commuting costs, commuting time, and emissions associated with their travels. The solution also gives the user tips and nudges to encourage to travel more environmentally friendly. The app was at the trial stage and involved various target groups, such as university students and local businesses, in the development of the app.

The second sub-project is about the development, testing and implementation of autonomous buses in the city. This project was a collaboration between county administration, city municipality, and a private business firm (different than the actor involved in the aforementioned sub-project). The goal of this sub-project was to explore the feasibility of autonomous electric buses and to pilot such technology in arctic winter conditions. In addition, they also wanted to see how autonomous buses can complement the existing transport services and offering citizens alternatives modes for transport.

4.5. Data Collection
This section presents the process of the data collection. Several methods can be employed to collect data in a case study qualitative research and triangulation of several data sources to provide a rich understanding of the phenomena, namely the impact of institutional logics on collaborations in smart city and smart mobility projects. This triangulation included interviews, research diary notes, and documentary analysis. The data collected from interviews can provide useful insights into the causes and effects of various phenomena, as seen from the perspective of the research participants.Comparatively, data from observations

is based on the researcher's personal experience of the research study context and can provide insights into the interpersonal behaviors of the organisation as well as research participants (Easterby-Smith et al., 2015; Saunders et al., 2009).

4.5.1 Documentary Analysis

A documentary analysis was first carried which included official government reports about the transport sector's future plans, official documents, and reports from the regional public administration bodies about the smart transport project, information from website of the smart transport project, scientific publications, and previous research in the area of smart transport. This gave me a baseline understanding of the project and provided insights into further avenues for investigation. This data also played an important role to understand smart transport development projects as well as supporting the interview and interventionist data.

4.5.2 Observations

When it comes to observations, being an interventionist researcher allows for development of in-depth and rich case studies through which the researcher can take advantage of the empirical data collected and insights from practitioners. An advantage of interventionist research is that the researcher can gain access to an organization(s) and collect detailed information that might not be available to those using other approaches (Lukka et al., 2022). Furthermore, by being an active participant in a case study, the researcher can use this learning process to provide valuable empirical insights and theoretical contributions (Suomala et al., 2011).

I collected data as an interventionist researcher as I was engaged as a test-user, at first, and then as student intern in the smart transport project for a total period of 10 months during 2020-2021. The internship period lasted from 5 months. The university was an academic partner in the smart transport project working public administration and business actors on the research, development, and testing of an environmental dashboard board for nudging commuters to adopt sustainable and environmentally friendly modes of transport. I was engaged in researching the use of nudging and gamification as tools for changing mobility behaviour, testing of the app with target groups, and having consequent discussions with business partners, my academic and county administration supervisors. Being part of the team on the project, I was able to get a better understanding of the role of the actors involved, the complexity of the project and the interactions between the project partners. This helped in theorising by allowing me to be grounded in both data and action to actually understand what

matters in interactions of project partners. I documented the chronology of events during my internship, took meeting summaries and my own reflections and 'takeaways' of the events.

During my internship, I kept a research diary which was a simple journal of the events, my personal reflections, ideas, and notes on the project. There are several advantages to using a research diary. It gives the researcher more freedom in observing multiple situations and organizations (Easterby-Smith et al., 2015). In this instance, it gave me greater freedom to observe the project partners in action in different situations. Furthermore, it allows the researcher to collect other relevant data by using different data sources which provides a rich canvas of perspectives, facilitating to gain greater insight into the research study context and more analysis than it would usually be possible in the course of fieldwork (Easterby-Smith et al., 2015).

4.5.3 Interviews

Although the research diary and observations during the internship period provide more data, the main source of data for this thesis was the semi- structured interviews. The choice of interview was natural because it allowed for a more rich capture of data and to obtain the perceptions of various actors involved in the project. Close interactions with research participants allowed for development of personal connections as participants will be more willing to share relevant information which can provide further insight into a phenomena.

The choice of participants for a research study depends on several factors. These include the appropriate participants for the research aim, the number of participants and the time availability (Easterby-Smith et al., 2015). For this research, the aim was to capture the interplay of the actors' logics and how it affected collaboration. Thus, the first criteria was to have a representation of the actors involved in the sub-projects. The second criteria was that the actors had some degree of interactions with the other project partners. This was important as it was necessary to be able to understand how the actors' logics affected their interactions and collaboration.

This research has a set time limit. Hence, the number of interviewees had to be adjusted to a practical number considering the time constraints. Furthermore, I had decided to conduct interviews until saturation within the topic occurred and at which point the likelihood of more interviews providing new insights was less likely. The choice of informants was also strategic in that I approached individuals who were directly involved in the collaboration process and thus were able to provide rich insights. A snowball sampling strategy was used to recruit

interviewees (Easterby-Smith et al., 2015). Some were the researcher's acquaintances and were contacted directly, others were recruited through referral by informants. This was a useful strategy as it allowed for recruitment of other participants that were otherwise difficult to contact. Overall, this strategy resulted into 7 informants.

An interview guide was developed by considering the research question, research design and data collection strategy clarifies the purpose of the interview for both the researcher and the interviewee. So, a decision must be made on the type of interview to be conducted; high structured, semi-structured or unstructured interview (Easterby-Smith et al., 2015).

A highly structured interview has a detailed interview guide with a pre-defined order of questions with some questions having a narrow set of pre-defined answers. On the contrast, a semi-structured interview is a guided open interview in which a topic guide aims to cover a selection of topics. An unstructured interview is an ethnographic interview with individual questions aiming to encourage informal conversation (Easterby-Smith et al., 2015). Due to the nature of the research question, it was important that there be a flow between different topics and questions to allow for more in depth reflection. Therefore, a semi-structured interview guide was used. There was only one interview guide made in English. The topics and questions were predefined (Appendix 1). However, the interviewees were given the opportunity to ask questions or provide further reflections on topics if they felt something was missing or not covered in the interview.

The topics of the interview have to be relevant and related to the context of the research. The interview guide had three main parts consisting of opening questions, questions around the experiences of the actors and closing questions. The topics were related to the theoretical framework and the research question. It was important that the questions were not leading the informants to a specific direction, but rather allowed them to reflect on their experiences. Thus, most the questions were "how" questions. The interview started with asking the informants to describe their organization's goals, interests and role in the project. This was to get a baseline understanding of the actor's logic and also informed which questions to ask later in the interview process depending on their interactions with other actors. The interviewees were then asked to reflect on their interactions and experiences with other project partners. This was to get a more in-depth understanding of the factors that contributed to the success in collaborations and factors that created tensions and challenges. And lastly,

for closing questions, the informants were asked whether they had something more add and if there was something of value that was talked about during the interview.

In total, I conducted 7 semi-structured interviews with actors involved in the project at the public administration, academic, and business levels. During recruitment, the interviewees were informed about the aim of the research and how it was to be conducted. All interviewees were informed about the ethical guidelines and were asked to sign a consent form. Moreover, the interviewees were informed of the need to audio record the interviews and notes will be taken during the interview. The anonymity of participants was of utmost importance and any personally identifiable information was omitted. As the project requires the involvement of various actors, participants from the public administration sector (in particular county administration and city municipality), academia (university partner), and private business firms were recruited. Prior to starting the interview, all interviewees were provided with the interview guide that outlined the topics that were to be covered. The interview questions were not included in the interview guide sent to the participants to ensure impartiality. Of the seven interviews, five were conducted online and the remaining were conducted in-person. The interview durations ranged from 28 minutes to 59 minutes. During the interviews, I noticed that giving examples from my own internship experience made the participants more reflective. In addition, the semi-structured nature of the interview enabled the participants to reflect on aspects that were not part of my questions. Table 1 provides an overview of the research informants.

Table 1: Informants

Organization	**interviewee**	**Involvement**	**Interview**
County administration	Project manager 1	Continuous	48 min
	Project manager 2	Former- until 2022	59 min
City Municipality	Project manager advisor	Continuous	37 min

University	Former student intern at county administration	Minor- until 2021	28 min
			48 min
	Research advisor	Continuous	
Business	Managing director- business 1 (autonomous transport solutions)	Continuous	29 min
	Chairman of the board- business 2 (smart green mobility app)	Former- until 2022	41 min

4.6. Data Analysis

The recorded audio interviews were then transcribed into text. All interviews were conducted in English and were transcribed within days of its conduction. After the transcription and organization of information, the citations that corresponded to a topic in the interview guide were coded. The data was analysed by employing an abduction method as it is an interactive interpretivist process which is suitable for moving back and forth between empirical findings and theoretical concepts (Mantere et al., 2013). Interview transcripts, research diary notes and secondary documents were used to get an in-depth understanding of the data.

Analysis of the data was inspired by the (Gioia et al., 2013) methodology to structure the findings into initial codes, first order and second-order categories. As part of the manual coding, the transcripts were read several times to perform an initial coding. During each interview, I also took notes to keep track of important points mentioned by the participants along with my own reflections on the institutional logics of the actors and the literature. The initial coding resulted in 167 codes reflecting key points emerged from the data. After several rounds of reading and revision, the initial codes were grouped into first-order categories.

The move from initial codes to first order categories, first, I identified the institutional logic of the actors was from the interviews and interpreted in relation to the theory. Then, the different

actions and practices that contributed to alignments or created tensions and challenges were identified and grouped together. Overall, twenty-three first-order categories were formed. To be able to analyse the interplay of the logics in more-depth, I was inspired by (Ingstrup et al., 2021)'s work which analysed the alignments and tensions caused by logics between the same type of actors (e.g., county administration and city administration), two different types of actors (e.g., county administration and private business actors), and all actors involved in a partnership (e.g., academic, business, and regional public administration actors). This in turn informed the second-order categories. The data structure table can be viewed in Appendix 2.

Table 2: Description for Analysis of alignments and tensions at different levels

	Actor-type level	**Relationship level**	**System level**
Alignments in collaborations	Occurred when institutional logics of actors belonging to the same actor-type overlaps in terms of goals, practices and cognition	Occurred when institutional logics of two different actors overlaps in terms of goals, practices and cognition	Occurred when institutional logics of all actors overlapped in terms of goals, practices and cognition
Tensions and challenges in collaborations	Occurred when actors belonging to the same actor-type did not share the same logic in terms of goals, practices and cognition	Occurred when institutional logics of two different actors diverged in terms of goals, practices and cognition	Occurred when the logics of all actors were in conflict with one another in terms of goals, practices and cognition

The second-order categories form a narrative of "what is going on here?" (Gioia, Corley, and Hamilton, 2013, p.20) theoretically when examining institutional logics and collaborations in smart mobility projects. In total, seven second-order categories were formed. This reflexive and open process allowed me to open to discoveries. The main discoveries were related to the impact of COVID-19 pandemic, limitation of citizen participation to testing phase of the project, and challenges created by the bureaucratic decision-making processes of regional county administration. Altogether, the collective data interpretation was based on existing literature, my own research diary notes, and interpretations of the interviews. In the empirical findings section, I will present the most relevant and intriguing elements using illustrative quotes.

4.7. Research Quality

Research design presents a logical and coherent flow of the various elements of study to ensure that the research problem is effectively addressed. The quality of a research study can be examined through four ways; validity, internal validity, external validity, and reliability. The following sections elaborate on these items in relation to the research. Lastly, the credibility of the research and ethical considerations are presented.

4.7.1. Validity

Validity refers to the extent to which research findings provide an accurate description of what they are supposed to be presenting (Easterby-Smith et al., 2015). The construct validity of a research in a case study is about the extent to which the measures used in research accurately assess what they are supposed to. Internal validity refers to the extent the findings represent the truth in the population that is being studied. And lastly, external validity refers to the extent to which findings can be generalized (Yin, 2018).

To increase the construct validity of a case study, three strategies can be employed; the use of multiple sources of evidence, establishing a chain of evidence and asking informants to review a draft of the research. Construct validity can be affected by errors in research methods such as a researcher seeking participants that support their views. Additionally, interview, sample or publication biases also affect the construct validity. Due to time and resource constraints, a potential bias here could be the snowball sampling method used where the question might be raised that some actor's perspectives are more or less presented (Yin, 2018). However, I have attempted to have an equal number of participants that represent the various actors in the project. Furthermore, the research diary notes provide a supplementary source of evidence.

Yin (2018) suggests that internal validity is only relevant to explanatory and causal studies in which the purpose of the investigation is to explain the cause and effect of one event on another. This research is an exploratory study and therefore, does not require to employ this concept. The applicability of theoretical frameworks and the specificity of the research question are both essential components in determining the generalizability of a study's results. In formulating the research question and collecting data for this research endeavour, I have predominantly employed "how" questions.

4.7.2 Reliability

Reliability refers to the extent to which the research methods can produce consistent results (Easterby-Smith et al., 2015). The aim of reliability is to minimise errors, and to ensure the findings are not the result of the researcher's subjective bias, rather it is the result of the research (Yin, 2018). Making the research process as transparent as possible is one method to generally tackle the reliability issue.

Since this study deals with the logics as cognitive aspects, reliability was a concern as the results cannot be replicated due to subjective nature of the case study. Much time and

attention were paid to the research process. The earlier sections described the process in detail and explained the reason for the choice of the questions. Moreover, the wide range of literature was used to support the findings and interpretations.

4.7.3. Research Ethics

Research ethics refers to principles and institutional arrangements that govern the standards for research conduct. These principles protect both the interests of the participants and the research community (Easterby-Smith et al., 2015). Any research can have consequences for its participants, the researcher, or the wider scientific community. Thus, it is important to assess the research on the basis of ethical principles.

Additionally, The Norwegian National Research Ethics Committees in the Social Sciences and the Humanities (NESH) has established guidelines for research ethics (NESH, 2021). These guidelines are categorized into five parts which set out various research obligations. The first category is about the research community and its collegial responsibilities. The second category is to ensure the protection and rights of all research participants. The third category concerns vulnerable groups and institutions that may need extra consideration. The firth guideline is about research funders and partners, the researcher's obligations towards these partners and the ability to be independent and open against demands for utility and societal relevance. Lastly, it is the responsibility of the research and the scientific institutions to communicate the scientific results to the wider academic community (NESH, 2021).

These ethical principles and guidelines have been in consideration and used throughout the research process. Prior to the collection of primary data, the research was registered with the Norwegian centre for research data (NSD). The plan for the collection, storing and archiving of the data was outlined in order to obtain approval. This was a required step as the research is qualitative and required the collection of descriptive data from the research participants. All interview participants were informed of the type of data that was to be collected and how this information and will be stored and archived. All participants were asked to sign a consent form and were informed that an audio recorder will be used record the interview. The app Nettskjema-diktafon by University of Oslo was used to record the interviews (University of Oslo, 2021).

Privacy and anonymity of the participants were of utmost importance. The data from my research diary was modified to exclude any identifiable personally identifiable information. The interviewees were assigned numbers in interview transcription and no personal data

mentioned in the audio recordings were transcribed into text. All data was archived on the Nord university Office 365 account which is not synchronized with a personal computer in accordance with Nord University guidance and student responsibility for privacy protection (Nord University, n.d.).

5. Empirical Findings

This chapter will describe the main findings based on the triangulation of interviews and research diary notes. In line with the research design, seven interviews were carried out with actors from academic, public administration organizations, and private business firms that have collaborated in the smart transport project. Findings are grouped into three main sections that were derived from the theoretical framework and collected data in order to highlight the different topics.

The institutional logics of the actors were identified and interpreted through the theory. Then, the different goals, cognition and practices of actors that contributed to alignments between the actors or created tensions and challenges were identified and grouped together. In order to better understand the dynamics of the interplay of actors' logics and how it affects interactions, I further grouped the identified alignments and tensions in three different levels according to the actors that were impacted. Actor-type level alignment and/or tensions refers to when the same type of actors (e.g., county administration and city municipality) shared or did not share the same goals, cognition, and practices. Relationship level alignment and/or tension refers to when two different types of actors' (e.g., academic and business actors) goals, cognition, and practices overlapped or did not overlap. Lastly, system level alignment and/or tensions refers to when all three actors' goals, cognition, and practices united or were in conflict. The most relevant information to the analysis of the project were selected and illustrative quotes from research participants will be given to shed light on relevant themes and possible challenges.

5.1. Hybridity in Logics at Play

The smart mobility project has several sub-projects focusing on different developmental projects for a smart transport system. The actors in this case study were involved in two sub-projects in particular. The first sub-project is a joint collaboration between the county administration, the university as research partner, and a private business firm for the development of an environmental dashboard app that aims to inform citizens of the environmental impact of their travel habits as well as raising awareness and engaging the

public to choose more environmentally friendly methods of transport. The app was at the trial stage and involved various target groups, such as university students and local businesses, as test users in the development of the app. The second sub-project is about the development, piloting, and implementation of autonomous buses in the city. This project was a collaboration between county administration, city municipality, and a private business firm (different than the actor involved in the aforementioned sub-project).

As the project owner, the county administration was involved as an actor in the two sub-projects. However, not all other actors interacted with each other. For instance, the city municipality was not involved in the development of the environmental dashboard app and the academic actor was not involved in the autonomous buses sub-project. Furthermore, the business actors involved had different offerings; one was concerned with application development while the other was concerned with operation and implementation of autonomous bus solutions. For both sub-projects citizens were involved in the testing phase after the solutions had already been developed. This had implications for the actors involved which will be unpacked in the following sections.

The actors had different goals and motivations for being part of the project. The academic actor's institutional logic was the advancement of knowledge and research "on citizens involvement, performance measurement and smart cities and its application in real-life settings" (Informant 1). They collaborated with the county administration, a private business firm, and university students and local businesses as test users for the development of the environmental dashboard app. Although involved in different sub-projects, the institutional logics of both business actors was the development and commercialization of sustainable transport solutions. The business actors had a societal goal and a commercial goal.

> "We are responsible for operations, (and) for delivering the vehicles". (Informant 7, business actor in sub-project 2)

> "Our product is an app that sort of incentivizes, motivates to use smart green mobility. Our goal is to try to reduce the use of private fossil fuel cars in urban areas by making the individual more conscious of what they're doing and to motivate them using gamification and incentives and points and fun" (informant 3, business actor in sub-project 1).

Public administration actors included the county administration and city municipality both of which were project managers and worked with the academic and business actors for

development and implementation of smart and sustainable mobility solutions. The public administration had a societal goal for the city to become more sustainable in the long term. Informant 4 illustrates this by saying: "we try to make sure that we had some type of value when it comes to local innovation. But also having a goal that we are also decreasing emissions by using this new type of solutions, but also in the bottom of all of this is travel behavior and how to change it".

The institutional logics of the actors both differed and complemented each other. The academic actor had a bias toward long term development of knowledge, competencies, new technologies in smart cities and identifying partners for future research. The business actors had a goal to capture and commercialize business opportunities. The public administration actors had a bias towards long term city development and strengthening the city's attractiveness and local innovation by moving towards a sustainable transportation system.

Despite the divergence in institutional logics, there is also overlaps of logics between the actors. In sub-project 1, all actors had a goal of developing sustainable transport solutions. Their interest in new mobility solutions made their institutional logics unite with one another. The academic actor was interested in research and development on topics related to smart cities, citizen involvement and performance measurement. This goal made their institutional logic overlap with the institutional logic of the business actor which were interested in the development of a technological solution (i.e., the environmental dashboard app) that required user trials with different target groups. Additionally, in both sub-projects, the public administration and business actors had a goal to develop sustainable transport solutions which made their institutional logics converge with one another.

The next section will describe in more detail in which areas and at what levels the institutional logics of the actors converged.

5.2. Hybridity in Logics: Factors Facilitating Alignments in Collaborations
This section presents the interactions between the project partners and how alignments emerged when the institutional logics of actors overlapped in their goals, cognition, and/or practices.

The county administration and city municipality were aligned in their goals to develop new and sustainable transport solutions. This is illustrated by informant 4:

"We are working with city (municipality)…to, in many cases, find solutions on how to change travel behavior and also testing how the new type of mobility solutions can be used in the future".

The business and academic actors in sub-project 1 aligned in their goals and cognition to advance knowledge in the field of smart mobility. This converged with the research goals of the academic institution and the interest of the business actor to develop a solution that addressed a societal, environmental goal. Collaboration with the academic actor and university students as test users helped in refining the business actor's value proposition, and assessment of their offering. Informant 3 (business actor in sub-project 1) said the following:

"I feel that interacting with academia is something that very often not prioritized very highly in companies like my own and also in probably most of the places where I've worked. It's given me the chance to take a little bit of a break and think of things, not least what I'm doing from a different perspective. It gives me the opportunity to think about things from a distance and also to get someone else's opinion with a different background and all different age groups is extremely interesting and informative. It's a shame there's not many people that prioritize that kind of thing".

In addition, there was alignment between the public administration and business actors' goals and actions as a result of clear identification of project scope, goals, and measurable performance indicators, which made for an easier transition to full scale solution. Informant 2 illustrates this by reflecting on their experience of implementing a car sharing initiative:

"The goal of the car sharing initiative, it was initially a pilot, but the goal was always to have full scale solution by the end of the pilot so that the pilot should be released by full scale solution. It was much easier to make the transition over to a full-scale procurement in the end of the pilot".

The public administration actor in sub-project 1 shared a similar anecdote when working with the business actor and the university on trialling the app went more smoothly because "we had a scope, a time limit. We had a set date; we are going to meet you there and test this app. So that type of methodology, it's more accurate when it comes to piloting" (informant 4).

The academic actor also notes the importance of a clear road map. Informant 5 says:

"When you're at the early stages of planning a project like that, you get all the involved partners, everyone that's going to be involved in this project together and set

the goals like what do we want to achieve with this and what is going to be the timeframe? How much resources are each of us going to commit to? How often are we going to meet and pinpoint a clear kind of road, even though that might change a bit and maybe it'll stall at some point. But everyone has the same vision and the same clear idea of what are we achieving".

The institutional logics of all actors aligned as they all had the goal to develop new knowledge and jointly recognized the purpose of, and rationale for smart mobility solutions. The collaboration enabled for sharing of resources, knowledge, competencies, and people which would otherwise be difficult for actors to access on their own. Informant 4 (public administration actor) saw this as a circular flow of knowledge saying: "how we are working together with the students, the university and also the private sectors. This is circular economy in my point of view. It doesn't have to be money, it can be knowledge, we can get some feedback around the type of issues that we want to do to solve".

Working with the county administration, the academic actor cited a collaborative and ongoing process of figuring out the next step. Informant 1 (academic actor in sub-project 1) explained further: "it was really like, okay, we have this idea, is it good? Okay, we go further, we have this idea, and we will do this and then we will do that. It was very interesting also in terms of content, problems, project ideas and activities. They were very open and really eager to work with us". Reflecting back on my own research diary notes, I agree with the informants as I also experienced positive interaction among the actors, openness for constructive dialogue and communication and drive to creating sustainable solutions that benefit citizens. The business actor and county administration in sub-project 1 had regular meetings to share updates on the app development as well as incorporating users' feedbacks and the student's input into the app interface. Informant 5 who had had an internship during sub-project 1 commented the following:

> "It was interesting to see how the county administration worked together with an external (business) actor to create the best app possible. I thought the collaboration worked really well and they had good traction and continuous meetings to keep things moving in the right direction. We had meetings every other week or every three weeks to follow up on feedback and potential changes".

Having the right people were stressed strongly by public administration actors as an important factor influencing the project. The public administration actor noted the importance of having

the right people to steer the project. In this regard, informant 2 said: "It's a huge load on individual people, so the right people need to be involved. If you just give a project to someone who is not invested in the project, the project will not succeed. So having people on board that want to have the project to succeed is a key element". Informant 4 also mentioned this point: "It is getting the right people to sit down around the table and make smart things".

The logics of the actors in terms of cognition and practices contributed to alignments in collaborations. Openness to dialogue and changes was noted as being important by all actors. Informant 2 (public administration actor in sub-project 2) says: "When you don't have a fixed and established business model for a product, that is risk taking both from the company but also risk for us. We need to make changes while the project is in development and also when it's delivered, we need to be able to change things along the way. You need to have an open dialogue early so that you can get the correct mindset in the businesses". Similarly, informant 3 (business actor in sub-project 1) notes: "they (project partners) understand it (the project plan), and that you have points along the way where you can come with inputs and changes. If you are developing and you see that it's needed, that you have those platforms that you get together".

In summary, the actors' institutional logics overlapped as they all shared the same goal of developing new mobility solutions. Clear definition of project scope and goals brought the logics of two different actors closer together. Among all three actors, alignments in cognition and practices in terms of openness to dialogue, a willingness to learn through trial and error, and the presence of right people onboard the project contributed to alignments in collaboration. The next section will present the tensions and challenges that arose as a result of the interplay of different logics.

5.3. Hybridity in Logics: factors giving rise to Tensions and Challenges in Collaborations

This section presents the interactions between the project partners and how tensions and/or challenges emerged when the institutional logics of actors were in conflict with one another in their goals, cognition, and/or practices.

5.3.1 Communications, Data, and Coordination of Activities

Between the public actors, the county administration and city municipality, there was misalignment of goals, practices, and cognition. The complexity of organizational structures and subsequent departmental goals created challenges in steering the two public administration actors towards the same overall goals for the project. Reflecting back on my

research diary, this was not a factor that I observed as I believe the short duration of the internship, limited exposure, role and responsibility to the internal workings of public actors did not enable me to observe this aspect of interactions. Nevertheless, informant 6 (public administration actor in sub-project 2) says:

> "I don't think that the people working at county administration or (city) municipality have the same goals if they're working at different departments. There isn't one sort of big goal that everybody knows about, so making sure that we're all pulling in the same direction is more of a struggle within the public departments. They might have departmental goals; we will reduce emissions, or we will have more mobility, or we will make cleaner roads or whatever, but maybe not how we're working in this together. And even within county administration and the (city) municipality, it was difficult to make sure that all the departments are working together and making sure that they understood that they were part of the same team".

Lack of interdepartmental communication and coordination of activities created misalignment of practices between the public administration actors. Informant 2(public administration actors) illustrated the lack of communication between public administration departments with an example of working on the autonomous buses:

> "There is a lot of autonomy in each department, so, many departments do not coordinate with other departments. One of several of the routes we planned to do for the autonomous buses, quite late in the process, we found out that the Water and Sewerage Department was planning to renovate a complete pipe system in that street and that happened several times with different routes".

Furthermore, data silos and lack of standardized data framework limited access to data for the public administration actors. Informant 4 said:

> "The lack of available data is one part that we learned is challenging. Although the County Council own a lot of data, it's the accessibility of the data which is challenging. So, we have a lot of silos, and we have a lot of different type of actors that kind of create data. The other part is standardization, which also have been an issue where you have the data, but it's all different type of standardization. So, when we try to build a new smart mobility solution, we need all actors to have the same type of framework to build upon".

5.3.2 Coordination of Activities, Bureaucracy and Politics

Between the public administration and business actors, lack of communication created a challenge in the autonomous bus project. The business actor working on autonomous buses in sub-project 2 similarly noted: "we were supposed to connect the airport to the harbour, and everything was clear, and we had this meeting and we had everything done and then suddenly somebody from the municipality said that by the way, you cannot go there, you cannot drive there. You're going to take up the whole street. So, we had to start all over again". This reflects the lack of interdepartmental communication between the public administration actors which resulted in a wider tension to other actors.

Decision making in public administration organizations were found to be more of a political process. Subsequently, communication with political leaders and committees adds another dimension to the multi-faceted nature of public administration organizations which has trickle down effects on the commitment of public officials to the project and project budgets. This seemed to be mostly an issue for the internal processes of public administration actors. Although it was highlighted by one of the business actors as well, it did not seem to be an issue for the other business actor (sub-project 2) and the academic actor. Informant 6 (public administration actor in sub-project 2) reflected on their experience saying: "on top, the political majority in (city), there were different parties represented. So, I don't think that we managed well enough to have an open communication with the majority parties in the municipality to make sure that they were on board". Similarly, informant 2 (public administration actor in sub-project 2) said: "One of the hardest things to get done in a public entity is the commitment. If we want to use money, it usually has to go through several leaders. But also, it might be that the politicians also want to have their go, so then it's a huge delay. So, if we should align both the municipalities and the county administration's efforts with public transport's commitment then it needs a lot of time to be a coordinated project".

However, not all actors perceived bureaucracy to be a source of misalignment in goals and practices. The business actor in sub-project 2 did not have such experience. Furthermore, it was noted by the academic actor (informant 3 in sub-project 1) that, although, each organization has its own organizational structure and processes, it was not a factor that hindered collaboration for them. Informant 5 (academic actor in sub-project 1) did not have insight on this matter due to the limited amount of time spent on the project and scope of responsibility. The informant said: "I don't think I was involved enough to see what the

structures and the reporting lines were and to really see where it stalls or go quicker. As an intern, I didn't get that much information" (informant 5).

Ownership of data and its regulation was another factor that resulted in partial misalignment between the public administration and business actors in sub-project 2 in the beginning. Although, the issue was resolved by deciding that the owner of the work package is the owner of the data, it raises the question of, if resources/data are shared between actors, can one actor use it for their own profits? This could become a potential issue in the future as the value of data becomes higher.

5.3.3 Rules and Regulations, Diminished Community Logic, Local Presence

A goal of the actors in sub-project 1 related to the environmental dashboard app development was to trial the app with different target groups. The actors' cognition and practices of how to reach out to citizens created challenges for them in engaging with citizens as test users in the project. Although, the actors noted the positive effect citizen involvement as informant 3 (business actor in sub-project 1) says: "it's very much a learning experience where we see what we need to address. And it has sharpened our value proposition and also reduced the ambition as to who we are going to reach and how large of a percentage we can actually motivate".

The actors were passionate about citizen involvement, research, and development in general, but in reality, limited testing time frame, lack of interest and engagement from users made the user testing process difficult. Informant 3 (business actor) said: "The end-user is hard to reach. They're not necessarily interested in downloading another app. There are many apps out there already and people might see this sort of fatigue for new apps and new ideas to a certain degree". In the same vein informant 4 (public administration actor in sub-project 1) noted:

> "It takes time to do this (referring to working with end-users). So, if you want to have real engagement and real citizen involvement, you need to spend hours doing that, you need to go from your desk and out to the market. And then also you will get a lot of challenges. If you're used to more straightforward solutions, that this is not the ideal place".

It is also interesting to note that citizens were involved in the development process after a solution had already been made rather than involving the citizens at earlier stages of the product/service design process. Additionally, methods and channels of communications with

citizens can greatly affect their participation and interest in the project. In this regard, informant 5 (academic actor in sub-project 1) noted that it's important to think creatively about drawing the end-users' attention "in addition to what the message you want to give. You have so much competition there, so many apps and some are just a phase. They're just there for a short time and then they disappear. People are now more selective with what they spend their time on. So, it's what's in it for them isn't clear or it doesn't match what their wants are. And I think it is harder to get them to commit or to trial something new".

All three actors also noted the importance of local presence and local knowledge. Informant 5 (academic actor in sub-project 1) illustrated this point with an example: "local presence and local knowledge is important with the app testing. I think what I realized was that a lot of people don't know about this project. That lack of information availability, it kind of made people reluctant to want to be a part of the project, especially I think for the end users and people that were trying to get to test the app". Informant 4 (public administration actor) said: "I can say that's also challenge in the app testing is we needed local presence. It's key and although we had a pandemic, we managed to do some interactions with the citizens. I think you gain more value if you have local presence and local knowledge around these results". The public administration actor cited an example of a need for change in communication style and expansion of the target groups when testing autonomous buses. Informant 4 said the following in trialling autonomous buses with elderly people as the target group:

> "We experience thar the elderly people are more averse when it comes to new technology. We don't get as many passengers as we want, although it's totally free. We are now trying to see if we can change a little bit around our communication towards the elderly people. But also, we are going to target some more other personas. We will see how we can use some type of nudging or gamification towards all type of personas".

Rules and regulations governing new technologies were also identified to cause misalignments affecting the pace and scope of the project. Informant 4 (public administration actor) said: "when it comes to autonomous busses, the law and the regulations are so strict that the technology is one step ahead of the law and the regulation. And also, it's a lot of typical bureaucratic solutions. it takes time to establish a foundation where we can start just to get to the starting point".

It was mentioned by both actors that how they had envisioned the autonomous technology to develop was not how it had actually developed. Informant 6 says: "What we thought in 2017 would be in 2022...we were wrong on so many levels and we thought that the autonomous technology would be much farther along. And that has been difficult both within the project but also within the public and specifically with the state transport department because they granted the money based on something we wrote in 2017. So, trying to adjust to both the technology that's changed and also the regulations that are changing and not changing fast enough has been it's been fascinating". Informant 7 similarly noted:

> "It is the technology that is too slow. If you ask me in 2018, where are you in 2022? We are not there. We are still in level three, and we thought we will be in level four. So, the legislation will be opening up for allowing more when the technology is mature enough and proven enough. But the technology has been proven in level three. So, we need to continue developing more mature technology".

5.3.4 COVID-19: Source of Challenges for Some Actors Only

The findings showed that COVID-19 pandemic had an impact on the practices, cognition of the business and regional public administration bodies only. Informants from the academic partner side did not observe the pandemic to have affected the collaboration process.

For the public administration actors, COVID-19 affected budgets and commitment to project by political leaders. Informant 2 (public administration actor in sub-project 2) said the following regarding the reduction in budgets and its subsequent impact:

> "A lot of the projects were delayed or put on hold and some of the money that the partners should put into the project was held back. The municipality and the county administration also had a lot of money that they needed to be allocated to COVID handling. That also makes commitment harder because if you have committed and you suddenly have to remove a lot of money from your budget, you have the dilemma if you should stop the projects that you have committed or lay off people. On top of that the autonomous bus project was delayed because of both COVID and also the following chip shortage".

Informant 6 (public administration actor in sub-project 2) notes the impact of COVID-19 on the project commitment by the political leaders: "I think especially for the county administration and municipality this (the project) was not a priority. It just dropped off the radar. In some ways after COVID, it was pushed back. I remember also being told by some

politician that the project wasn't a part of the core services that the county and city municipality was delivering to people".

Moreover, both public administration actors and business actor involved in sub-project 2 mentioned resource and material shortages due to COVID-19 affected goals and practices resulting in project delays. Informant 2 (public administration actor in sub-project 2) noted "chip shortage" in the market for autonomous buses, while the informant 7 (business actor in sub-project 2) noted: "delay in delivering electric vehicle components, PCs, hardware components, lack of drivers (for autonomous buses) and the war (referring to Russia-Ukraine conflict) coming in March, that also depleted resources".

In addition, changes in leadership of the private business actors as a result of COVID-19 caused the business actors to shift focus to their core cash cows. Informant 6 (public administration actor in sub-project 2) noted: "They (referring to their business partners) had a shift in leadership that made the company more focused on core businesses. They used to have a smart city department that was looking into new business models and new business ideas for smart cities that was shut down. When all of these actors were more hesitant to use extra money or extra resources, it (the project) also had to have cuts in the budget, but it also made it harder to have the partners go outside of their own box". Although it must be noted that this was not the case for the other business actors involved in the project as their offering was their core business service.

To summarize, data silos, decision making processes, and lack of interdepartmental communications between public administration actors contributed to creating tensions and challenges. This divergence in practices also affected coordination of activities with other actors. Internal bureaucratic processes and politics of public administration actors also affected project budgets and commitments. With the exception of the academic partner, COVID-19 had an impact on actors causing project delays, changes in budgets, and commitment by senior politicians to the project.

6. Discussion

The purpose of this study was to explore how triple helix partnerships between public, private and academic actors unfold in smart city smart mobility projects. Particularly, the main research question is *how do actors in triple helix partnerships from public, private and academic sector with differing institutional logics collaborate together in smart city partnership projects?* To answer this question, the study applied the theory of institutional

logics (Greenwood et al., 2017; Thornton et al., 2012) to explore the interplay of academic, state bureaucratic and business logics, and how collaborations develop in light of the dynamic of different logics.

Empirically, I conducted a case study of a smart mobility project in Norway. Based on documentary analysis, research diary notes and seven interviews with public administration, businesses and academic actors involved in the project, the empirical findings will now be further analysed regarding their contribution to understanding the interactions of logics in collaborative projects. In light of the empirical findings, I developed an intricate picture of complexities around actors interactions and related constellations of institutional logics at play (Figure 2).

Figure 2: Main Findings
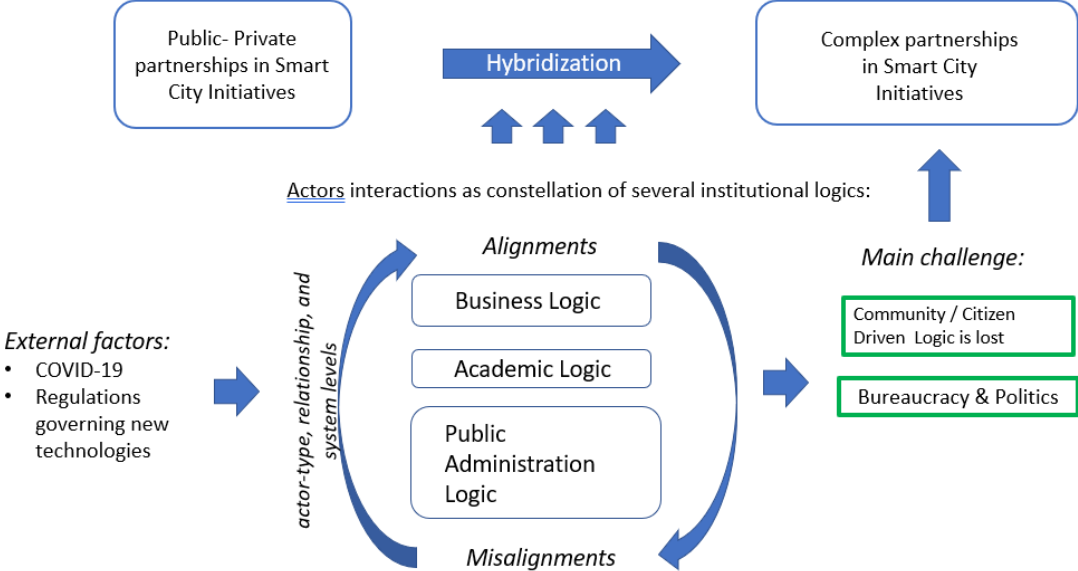
6.1. Hybridity of Logics at Play: Factors Facilitating Alignments in Collaborations

Institutional logics refers organizational and individual goals, beliefs, norms, and practices which shape and regulate actions and behaviours at the organizational level, field level (in this case the smart city development, and the broader societal level (Greenwood et al., 2017; Pansera et al., 2022). Based on the empirical findings, the institutional logics of the public administration, businesses, and academic actors were identified. The academic actor's institutional logic was the advancement of knowledge and research on smart city developments, such as citizen involvement and performance measurement in real-life settings. The institutional logics of both business actors was the development, commercialization, and operationalization of sustainable transport solutions, even though the actors were involved in

different sub-projects. The Public administration actors were project managers and worked with the academic and business actors for development and implementation of smart and sustainable mobility solutions. The public administration's institutional logics was a societal goal for the long-term sustainable city development.

The success of multi-actor collaborations is affected by the degree of similarity in the actors' goals, interests, and priorities as well as their purpose and rationale for collaboration (Öberg et al., 2014). When looking at the institutional logics of each actor, it was found that they overlapped one another in certain aspects. The public administration actors had a logic of developing sustainable transport solutions. Due to this logic, their goals and cognition were aligned with the other actors as they were keen on supporting the development and implementation of new mobility solutions into society, thereby supporting the operationalization and commercialization of new solutions. This motivation blended with the institutional logic of the academic actor, which is to advance knowledge and research. The business actors' institutional logic of developing and commercializing new transport solutions was also realized. The collaboration enabled the actors to develop, test, and pilot new solutions and business ideas in real-life settings. Similarly, (Lundberg et al., 2012)'s study found that interactions, dialogue, shared motives for collaborations between public, private, and academic actors facilitated social interaction and was a common denominator bringing the actors closer together.

Hybridity in logics in terms of goals was then clear as all actors shared the same goal of developing sustainable transport solutions. Hybridity in logics in terms of practice was also present as the actors were engaged in piloting and testing of the solutions and considered it to be contributive. These findings are similar to that of Ingstrup et al (2021)'s study of three sub-cases in a circular economy cluster in Finland found that in one sub-case the academic, industrial and government actors' logics converge in goals and practices as they all shared an interest for developing circular economy solutions and technologies for urban areas. Although, it must be noted that not all actors were present in all phases of the project. Notably, in sub-project 2 related to autonomous buses, the academic actor was not involved in the piloting and testing of the solution at the time this research was conducted.

Institutional logics are the enabling conditions for successful collaborations. To what extent a triple helix partnership is able to achieve its goals depends on the efforts of the actors (Cai, 2015). Openness to dialogue and communications, and willingness to learn through trial and

error were factors that contributed to synergies between all three actors. This is in line with Saz-Carranza et al. (2012)'s study of public-private joint ventures which found that challenges posed by competing logics were overcome by involving and communicating with stakeholders. Open communications facilitated interaction among partners, built trust and encouraged joint learning. In addition, Ahmadsimab et al. (2021)'s study of firms and non-profit organization partnerships found monitoring and learning as one of the strategies employed to resolve tensions.

Although, there was hybridity of logics in certain aspects, there is also divergence of logics between the actors. The academic actor pursued long term development of knowledge, competencies, new technologies in smart cities and identifying partners for future research. On the other hand, the business actors had a goal to capture and commercialize business opportunities while the public administration actors were concerned with long term city development and strengthening the city's attractiveness by moving towards a sustainable transportation system. These differences in logics in terms of goals, cognition, and practices can cause tensions and challenges among the same actor-types and between the different actors. This echoes Ingstrup et al (2021) which found a misalignment between goals and cognitions of academic and industrial actors; while academic actors sought advancement of knowledge in creating circular economy solutions, the industrial actors sought quick implementation and commercialization of new technological solutions.

6.1.1 People: Important for Facilitating Alignments in Collaborations

Smart city development requires input and contribution from various groups of people (Hollands, 2008) with "Smart people" cited as one of the crucial factors to the realization and operation of smart cities (Meijer et al., 2016).

Having the right people within teams and onboard the project was frequently mentioned by the informants as one of the crucial factors that contributed to creating alignments at interorganizational levels and among the actors. This is in accordance with Benevolo et al. (2016) states that people are the influencing card to implementing successful smart mobility solutions.

The institutional logics of the actors aligned in terms of goals and cognition which facilitated the logics hybridity. This is in line with Corsaro et al. (2011) who states that for trust to be built between actors, there has to be alignment in cognition and perceptions of the partners to encourage knowledge sharing and communication.

Openness to dialogue and change and willingness to compromise was frequently mentioned by the actors in facilitating the steering of the project toward its goals. The actors had developed confidence in each other's competencies and trust which solidified relations between the actors. Similarly, Lundberg et al. (2012)'s case study of drug development in the Swedish context found that building trust and confidence contributed to positive cooperation experience among academic, industrial and government actors. Although, it must be noted that some of the actors had previous experience of working with one another as this can affect the actors' initial disposition of collaborating with each other, particularly in the early stages of the project. Joint learning through testing and piloting can serve as a bridge between actors from different sectors and buffer clashes of competing logics. They are also important to build trust between actors; in particular they help to build trust based on shared experiences. It also reduces stereotypes the actors might have toward each other and enables to explore mutual gains (Saz-Carranza et al., 2012).

It is also important to not overlook the effect of social capital in such collaborative projects. The networks of people and relationships in an organization and between different actors can enable collaborations to function more effectively (Lundberg et al., 2012). Social capital facilitated collaboration by connecting people together who otherwise might be difficult to connect with. The public administration actor, for example, was able to connect with an individual who acted as a "door opener". Lundberg et al. (2012) echoes this finding in their study that government actors and business actors acted as such by sharing their network contacts.

6.2. Hybridity in Logics: factors giving rise to Tensions and Challenges in Collaborations
6.2.1 Communications, Internal Processes and Data: Cause of many Tensions
Tensions and challenges resulting from misalignments in goals and practices emanating from the state logic of regional public administration bodies affected the project partners. Between the county administration and city municipality, there was misalignment of goals, practices, and cognition. The complexity of organizational structures and subsequent departmental goals created challenges in steering the two public administration bodies towards the same overall goals for the project. Furthermore, data silos and lack of standardized data framework limited access to data for the public administration actors. The findings are similar to a study of multi-actor collaboration for digitalization of infrastructure in Swedish municipalities which found that tensions and challenges arose from a lack of communication, coordination and

insufficient organization between municipal departments and administrations (Claesson et al (2019) as cited in Chang et al, 2020).

Decision making in public administration organizations were observed by the actors to be more of a political process. Subsequently, communication with political leaders and committees adds another dimension to the multi-faceted nature of public administration organizations which has trickle down effects on the commitment of public officials to the project and project budgets. This seemed to be mostly an issue for the internal processes of public administration actors. Although it was highlighted by one of the business actors as well, it did not seem to be an issue for the academic actor and business actor in sub-project 2. In this regard, Saz-Carranza et al. (2012) states that business actors tend to think of the power and the role of the public administration actors as similar to that of a CEO of a private business. This can lead to frustration for the project manager or political head of the administration, who may have less autonomy, decision power and control in distributing resources compared to senior management of a private business.

The practices within the public administration bodies created challenges for both the actors within the public administration and business actor due to lack of interdepartmental communication and coordination. This is in line with Chang (2020)'s case study of five Norwegian municipalities which showed lack of common infrastructure, scepticism to partake in new developmental solutions, balancing provision of holistic solutions and profitability, and municipalities preference for modular solutions due to limited resources to create challenges.

6.2.2 Bureaucracy and Politics: Important factor but not for All

City governance, and in particular smart city governance, is a complex web of interactions between various public, private, and civil society actors. Each actor has its own organizational structure and institutional rules which influences power, decisions, and perceptions (Meijer, 2018). The impact of bureaucratic processes and politics, particularly from regional public administration, was found to be a source of challenge. This is similar to Saz-Carranza et al. (2012)'s study of public-private ventures which found the political-technical divide (in terms of priorities) and the legal bureaucracy of public sector to be frustrating and problematic for the business actors. In addition, Kornberger et al. (2017) exploring open data government in Vienna, Austria found that the goals of open government (e.g., citizen participation and crowdsourcing) conflict with the state logic of public administration. The authors argue that

the state logic, with its emphasis on centralized control and standardization, limits the potential of open government and reduces its benefits. In a similar vein, Pansera et al. (2022) investigating the role of citizens in smart city development in Mexico City found that state logic limited citizen participation. Although, there was a move to a single helix where government was the sole lead actor in smart city development. The authors suggest the reason for this is that the governance structure of the state logic in Mexico City is based on clientelism, characterized by informal networks of patronage and power (Pansera et al., 2022). Mexico City serves as an example of how socio-political institutions can create barriers to equitable and inclusive smart city development. These institutions shape local institutional logics, which can limit citizen participation in smart city initiatives.

Leadership can affect processes and outcomes in terms of actions and making actors think of issues in particular ways (Lundberg et al., 2012). Communication with political leaders and steering committees highlighted the complexity of organizational structures in the public sector which resulted in misalignments in goals, cognition and practices affecting commitment of public officials to the project and project budgets. Although, this was more of a misalignment within the state logic for the public administration actors, one of the business actors also did cite this as an issue for garnering support from political leaders for newer technologies. In comparison, the other business actor in sub-project 2 and the academic actor did not see bureaucracy affecting collaboration. This could be because engagement with the political leaders was not necessary to the collaboration. Ingstrup et al. (2021)'s study of collaboration between government, industry, and academic actors in a circular economy cluster in Finland did not note bureaucratic processes and politics of government actors to have affected collaboration. Although, the business actor in sub-project 2 did note that the initial road path for the autonomous buses was revoked by the local administration actor after all the planning and approval by the partners. This is in line with Saz-Carranza et al. (2012) who states that the support of and agreement from local public administration actor in a development project is not a straightforward and quick process since a road path zoning procedure is a complex process and requires approval of several actors and departments within the public administration in addition to the political leader's support. This also goes back to highlight the issue of lack of interdepartmental coordination between the public administration bodies with subsequent effect on plans and project pace (Claesson et al (2019) as cited in Chang et al, 2020).

6.2.3 Citizen Involvement: Diminished Community Logic

The smart city concept emphasizes participation of and dialogue with citizens which seems difficult to implement (Grossi et al., 2017; Hollands, 2008). Hence, it is important to see how citizen participation is implemented in different contexts.

In this research, citizens were not among the interview informants, rather the perspective of the regional public administration, business, and academic actors on their experience of working with citizens for testing the new transport solutions was gathered. All three actors were passionate about citizen involvement in the research, development, and testing of the solutions in general, but in reality, limited testing time period, lack of interest and engagement from users made the testing process difficult. Previous studies (Ingstrup et al., 2021; Lundberg et al., 2012; Saz-Carranza et al., 2012) did not look at the citizen engagement and involvement aspect in the public-private-academic partnerships. A specific window of time for testing a solution means that there needs to be sufficient marketing and communications to inform the citizens about the developmental projects as well as ample time allowed for recruitment of test users. The reason for this may have been lack local knowledge about the solutions and lack of local presence of the business actors. This is in line with (Paier et al., 2011)'s study of collaborations in European R&D networks which found that geographical distances between actors and organizations can adversely impact collaboration activities. Additionally, Jang et al. (2022) found that citizens' understanding of the purpose of participation and perceptions of service accessibility significantly affected citizen participation.

The target user groups for the sub-project 1 were, at the time of this study, university students, municipality employees and local business community. While the project aimed to test the solution with different groups of citizens, there were two issues which made recruitment and engagement more difficult. First, the message that was being communicated to all target groups centred around the benefits of having more sustainable transport solutions and the project actors wanting to showcase their drive toward developing a sustainable transport system. In this regard, the framing of the message did not seem to communicate clearly what would the individual gain of adopting and using environmentally friendly mobility solutions.

As different target groups have different needs and expectations, the project partners need to consider the point of view of citizens. Similarly, Borkamo (2022)'s study found that equipping citizens with knowledge and assuaging their perceptions of safety related to

autonomous bus solutions were important factors affecting citizen acceptance. So, methods and channels of communications with citizens can greatly affect their participation and interest in a project. In a similar vein, (Yuen et al., 2022) found that prioritising marketing efforts and resources to enhancing citizens' perceptions of automated technologies can greatly influence citizen acceptance. The authors highlight employing various social and traditional platforms to communicate the social, environmental, functional, and emotional value of such solutions.

Second, there was insufficient time allocated, in particular for sub-project 1, to recruit citizens for user testing. Moreover, there was not a designated person, team or department who was responsible for the recruitment of test users. Rather the recruitment responsibility fell to the project manager (i.e., county administration actor) who was responsible for the smart transport project overall. This had a counterproductive effect as one person is not able to effectively manage both the strategic and operational aspects of the project without having dedicated teams for specific tasks in the project. Therefore, it can be deduced that the state logic's practices created difficulties in collaboration process. Engagement per se does not equate to citizen acceptance and endorsement of new solutions (Milakis et al., 2021)

In addition, it is also interesting to note that citizens were only involved in later stages of the development process rather than from the earlier stages. In sub-project 1, citizens were recruited for the testing of the environmental dashboard app. Furthermore, in sub-project 2, both the role of the academic actor and citizens seem to diminish. With regards to autonomous bus solutions, the project was centred around piloting and operationalization of the solution in the city. At the time of this research, the academic actor was not involved in the research and development of the solution. Citizens were not involved in the piloting phase of the project to see how they felt about the implementation of such a solution in the city and more operational aspects, such as which routes or parts of the city would benefit more from having such solutions. This is in line with Pansera et al. (2022) who found that, in practice, smart city initiatives seem to be less citizen centric than those stated in the project description and aims. Similarly, Gohari et al. (2020)'s study of citizen participation in a smart city project in Trondheim, Norway found that the project was designed in a way that encouraged citizens to perform certain roles to provide feedback on solutions, yet Citizens do not have an opportunity to challenge or modify the project's underlying rationale and pre-determined goals and plans.

Although, a study by (Borkamo, 2022) researching autonomous buses in the arctic region found that citizen perceptions of safety, knowledge and social influence were important elements influencing the acceptance of new mobility solutions. The key takeaway was the importance of listening to the citizens, providing them with knowledge, and allowing for more experiences with the automated buses. Pansera et al. (2022)'s study findings were similar to this research that citizen participation in smart city developmental projects were mostly limited to user testing and feedback. This pushes against the citizen logic and towards the domination of the state and business logics. Interestingly, in Pansera et al. (2022)'s study, the state logic seemed to be the dominating logic and the state was the sole actor in the development of smart city rather than reaching out to collaborate across sectors.

The smart city literature suggests a progressive desire for citizen participation (Grossi et al., 2017; Hollands, 2008). Citizen involvement in smart city projects is subtle and limited to testing phases, yet they are responsible for the success of these solutions (Vanolo, 2014). Gohari et al. (2020) states that citizens are urged to contribute to finding solutions to issues of smart cities, yet their power and role prevents them to challenge or modify the project's underlying rationale and pre-determined goals. Citizens should be motivated to want to participate in smart city initiatives as they are, ultimately, the end users of the services and solutions (Bokolo, 2022). (Shelton et al., 2019) cautions against adopting a simplistic view of citizen participation. The realization of smart city goals necessitates the inclusion of citizens in discussions and roles that empower them to have a meaningful impact. But there is no consensus as to what strategies or activities should be used to involve citizens in smart city initiatives. This means that the project's defined goals and objectives are achieved, yet citizen involvement diminishes (Gohari et al., 2020). (Pansera et al., 2022) suggests that increased pressure for greater citizen participation at the local level would need to be manifested through the political system by various stakeholders to result in significant changes.

6.2.4 COVID-19 Impacts, and Regulations Governing New Technologies

COVID-19 was an external factor that had an impact on the institutional logic of the actors as it resulted in challenges for the actors in terms of their goals and practices. The effect on the pandemic was a factor that was not found to have been covered in previous research related to institutional logics and triple helix collaborations.

For the public administration actors, COVID-19 affected budgets and commitment to project by political leaders. As a result of the pandemic, projects were delayed and/or put on hold.

The informants noted a change in priorities for the political decision makers to shift to core services as more budget was redirected to COVID-19 response measures. Both public administration and business actor involved in the autonomous bus project noted chip shortage for vehicles in the market. Delay in delivery of electric vehicle components, hardware components, shortage of drivers (for autonomous buses) further depleted resources.

(Casady et al., 2020) suggest that effective partnerships are built on trust, shared responsibility, mutual understanding, effective communication, and teamwork. This implies that actors need to modify their institutional logics in terms of practices and cognition to be able to continue cooperation. This is also reflected by Corsaro et al. (2011) and Lundberg et al. (2012) who state that building trust and confidence between project members encourages communication, sharing of knowledge and cooperation.

Corsaro et al. (2011) states that misalignments in logics can have a positive effect on collaborations when actors are aware of the existence of misalignments between them and actively work together to improve their condition by aligning their logics in terms of practices and activities. In a similar vein, Ingstrup et al. (2021) found misalignments in cognition and practices among government actors to have a positive effect in collaborations as each of the government actors made a greater effort to align their interactions and coordinate practices with academic and industry actors. These findings are in line with the thesis's findings that institutional logics can develop and modify over time to respond to external factors (e.g., COVID-19) that affect collaboration (Ingstrup et al., 2021; Öberg et al., 2014).

New mobility technologies change the ways transport systems are governed, thus creating new challenges for the state (Milakis et al., 2021). Regulations, policies and legal aspects of governing new technologies and data ownership were also found to have been a source of challenge affecting the practices of the regional county administration and business actors. for the academic partner, these factors were not found to have had an effect on the collaboration process.

One of the public administration participants reflected that regulations and laws related to new technologies is not in pace with the development of the technologies, and that new regulations take time to be implemented.(Azad et al., 2019) says that literature on policy and regulatory issues surrounding new mobility technologies, in particular, autonomous buses, is lacking. In particular, lack of a legal framework and liability issues related to autonomous bus systems are noted to pose a risk and are critical issues policymakers must address. Similarly,

Lazarus et al. (2017) states that policies related to safety, public-private integration, user experience, and equity are main policy areas for public transport and autonomous technologies that need to be addressed. In addition, both public administration and business actor involved in the autonomous bus project noted that autonomous driving technology has not developed as they had anticipated. This can affect commitment to such developmental projects by political leaders and ultimately affect the state logic's goal of improving community good (Greenwood et al., 2008; Saz-Carranza et al., 2012).

Furthermore, there was concern over who would own the data, particularly for county administration, since county administration resources (e.g., real-time transport data) were shared with the business actor and it was unclear whether the business actor could use the data in its products/services for profit. Although, the actors did come to an agreement that all parties agreed with, especially considering that the autonomous bus technology is still in development, and it is difficult to regulate something that is not fully developed yet.

According to Milakis et al. (2021), the role of the state is changing within the transport ecosystem with the state assuming a more active role in enabling and facilitating new mobility solutions, as well as setting policies for data sharing and ownership, preventing market monopolies and other negative externalities, and ensuring inclusive access to new solutions. Going forward, these are factors that can pose challenges with new mobility solutions implementation and deployment. These have potential implications for the institutional logics of the actors as it affects the established and existing practices, cognition and goals of the actors involved in smart city initiatives. Docherty et al. (2018) cites in United Kingdom there has been resistance by bus operators to share their data to be used for route utilization purposes. "Data is the most valuable commodity" and whoever owns the data, holds the knowledge and power to control and assert its influence with long-term implications for governing mobility (Docherty et al., 2018, p.121). This highlights the need for clear policies and regulations on data sharing and ownership which protect the interests of the public and other stakeholders while ensuring that the data is used to create value for citizens (Docherty et al., 2018).

To achieve the desirable goals of a sustainable smart city as well as capture and enhance the value of new mobility technologies for all stakeholders and citizens, transport policies need be equipped to anticipate, respond to, and avoid adverse outcomes, and ensure that long term decisions are robust (Milakis et al., 2021). Kornberger et al. (2017) warns that technology

developments can "lead to new forms of bureaucratization". The opportunities and constraints that politics, bureaucratic processes, and policies provide constitute the space of what is possible.

7. Conclusion

This thesis analysed institutional logics of public, private and academic actors in a collaborative partnership in a smart city mobility project in a Norwegian city. It provides an empirical illustration of how triple helix collaborations develop and how institutional logics of the actors influences interactions resulting in hybridity of logics creating synergies and tensions and challenges among project partners.

Drawing on theory of institutional logics, the thesis discussed factors that contributed to alignments and misalignments in interactions and practices. The goals and cognition of all three actors' institutional logics was found to be aligned resulting in logic hybridity. Openness to dialogue, willingness to learn through trial and error, trust, knowledge sharing, and having the right people contributed to positive interactions and collaboration for the project partners.

The institutional logic of the public administration actor in terms of practices was found to be a cause challenges for the public administration actor itself and the business actor. Lack of communication, coordination of activities, decision making processes, and data silos were sources of tensions and challenge. Furthermore, Bureaucratic decision-making processes and politics stemming from public administration was found to have a significant impact on project commitments, budget allocations and work priorities. Although, the academic actor was not found to have been affected by the aforementioned factors.

Citizen participation was found to take place through user testing after a solution had been made. Although the actors were enthusiastic about involving citizens, the user testing process was difficult due to the limited testing time frame and lack of interest and engagement from citizens. Thus, the community, citizen-led logic which advocates for citizen involvement in design, development, and governance of smart city initiatives (Pansera et al., 2022) was diminished and restricted to testing only.

Furthermore, the COVID-19 pandemic was found to have had an impact for the public administration and business actors only, while the academic actor did not observe the pandemic to have affected collaborations. For the public actor the pandemic was found to have affected project commitment by political leaders, budget allocation, and work priorities.

Material and hardware component shortages, vehicle delivery delays, and labour shortages were factors that affected the business actor as a result of the pandemic.

With these findings, this master thesis contributes to the literature in several ways. First, it responds to calls to explore institutional logics in multi-actor partnerships as it manifests differently depending on the setting, location, and context (Chang et al., 2020; Ingstrup et al., 2021; Lundberg et al., 2012; Pansera et al., 2022). Empirically exploring logics through qualitative methods enables more in-depth understanding of how institutional logics unfold in collaborations between public, private, and academic actors. Second, the thesis provides new knowledge on interplay of logics in the context of a smart city mobility project in Norway. The key observation in this regard relate to diminished community logic, effect of bureaucracy and politics on practices, and the broad impact of COVID-19 on an organization's logic.

The findings contribute to previous literature by showing that institutional logics can change during the course of the collaboration process highlighting the dynamic nature of partnerships (Öberg et al., 2014). The degree to which shared goals, priorities, and practices align between collaborating actors determines the hybridity in logics, tensions, and challenges that emerge among them. The study's findings add to our understanding of how institutional logics interact in multi-actor collaborations in smart city initiatives, showing both the positive and negative effects of their interplay (Ingstrup et al., 2021). This demonstrates that synergies and tensions emanating from different logics can come from several sources and occur at different levels affecting project partners in different ways (Chang et al., 2020). This also adds to our understanding of how to manage and facilitate collaboration despite actor diversity, for example when it comes to developing smart city initiatives in urban areas.

The study contributes to the smart city literature by understanding the influence and implications of politics and bureaucratic processes on partnerships (Cardullo et al., 2019; Pansera et al., 2022). The importance of locally situated political dynamics should not be underplayed. Furthermore, previous studies (Cardullo et al., 2019; Hollands, 2008) emphasizes citizen engagement and dialogue, which can be difficult to implement. There is no consensus on which stage of development citizens should be involved, and strategies or mechanisms for citizen involvement and engagement in smart city initiatives. In this study, citizen participation took place after a solution had been made by the actors. so, participation was limited to the testing phase. Moreover, the actors in the project faced difficulties in

engaging with citizens due to lack of interest and time constraints. This highlights that project boundaries (in terms of time scope) and unclear communication strategies can further limit the degree of citizen participation.

In addition, the thesis has practical contributions. It is reasonable to think that logics would interact differently depending on the situational context, and that practitioners would therefore require different practices. Practitioners should be aware of sectoral differences and the different institutional logics of project partners. Differences in logics can be bridged through establishing personal relations which can foster trust, commitment, and communication among project members (Lundberg et al., 2012). Interdepartmental and cross-organizational communication and coordination of activities should be a priority. This can be improved through greater degree of digitalisation of processes and use of digital tools that allows project members to have a system wide view of plans and work progress.

The findings of this thesis suggests that it may take longer than anticipated to garner the interests of citizens to want to participate in development of new solutions. Thus, it is important to be aware of the amount of time that cooperative processes may take. Furthermore, actors must consider the communication channels and the message that the actors want to convey to citizens for effective engagement and participation with citizens.

The thesis has several limitations which can serve as inspiration for further research. The study is informative due to the exploratory nature of the study (Pansera et al., 2022). However, generalizations of the findings are limited by the research context to a single case study. As institutional logics manifest differently in different locations and contexts, more research is required to study institutional logics in multi-actor collaborations that differ in context from that of a Nordic country. Future studies could be carried out in other smart city contexts and settings that are different in terms of location, diversity of actors, and project goals (Saz-Carranza et al., 2012).

Additionally, the study can be criticized for being too limited as it only had seven informants. Because of this, the study is potentially not representing a broader and more complex view of collaborations in smart city projects. Still, I believe that by having an equal number of informants from academia, public administration and business actors, the picture captured does illustrate some important perspectives on the interplay of the various logics at different levels and how these are dealt with.

Restricting analysis to the interplay of the public, private, and academic logics of the actors runs the risk of excluding other logics that might influence collaboration (Pansera et al., 2022). Thus, another avenue for further research would be to explore citizen involvement and experience in such collaborative projects in smart city development. The citizen involvement dimension was only part of the documentary analysis in this study and insights from the interviews were from the perceptions of the other actors about engagement and involvement with citizens. Thus, it would be interesting to explore the citizens' perspective in such collaborative projects.

References

Agger, A., & Sørensen, E. (2018). Managing collaborative innovation in public bureaucracies. *Planning Theory*, 53–73.

Ahmadsimab, A., & Chowdhury, I. (2021). Managing Tensions and Divergent Institutional Logics in Firm–NPO Partnerships. *Journal of Business Ethics*, *168*(3), 651–670. doi: 10.1007/s10551-019-04265-x

Ainsalu, J., Arffman, V., Bellone, M., Ellner, M., Haapamäki, T., Haavisto, N., Josefson, E., Ismailogullari, A., Lee, B., Madland, O., Madžulis, R., Müür, J., Mäkinen, S., Nousiainen, V., Pilli-Sihvola, E., Rutanen, E., Sahala, S., Schønfeldt, B., Smolnicki, P. M., … Åman, M. (2018). State of the art of automated buses. In Sustainability (Switzerland) (Vol. 10, Issue 9). MDPI. doi: 10.3390/su10093118

Albats, E., Alexander, A. T., & Cunningham, J. A. (2022). Traditional, virtual, and digital intermediaries in university-industry collaboration: exploring institutional logics and bounded rationality. *Technological Forecasting and Social Change*, *177*. doi: 10.1016/j.techfore.2022.121470

Appio, F. P., Lima, M., & Paroutis, S. (2019). Understanding Smart Cities: Innovation ecosystems, technological advancements, and societal challenges. *Technological Forecasting and Social Change*, *142*, 1–14. doi: 10.1016/j.techfore.2018.12.018

Arellano-Gault, D., Demortain, D., Rouillard, C., & Thoenig, J. C. (2013). Bringing Public Organization and Organizing Back In. *Organization Studies*, *34*(2), 145–167. doi: 10.1177/0170840612473538/ASSET/IMAGES/LARGE/10.1177_0170840612473538-FIG1.JPEG

Ashraf, N., Ahmadsimab, A., & Pinkse, J. (2017). From Animosity to Affinity: The Interplay of Competing Logics and Interdependence in Cross-Sector Partnerships. *Journal of Management Studies*, *54*(6), 793–822. doi: 10.1111/joms.12273

Azad, M., Hoseinzadeh, N., Brakewood, C., Cherry, C. R., & Han, L. D. (2019). Fully Autonomous Buses: A Literature Review and Future Research Directions. *Journal of Advanced Transportation*, *2019*. doi: 10.1155/2019/4603548

Benevolo, C., Dameri, R. P., & D'Auria, B. (2016a). Smart mobility in smart city action taxonomy, ICT intensity and public benefits. In Lecture Notes in Information Systems and Organisation (Vol. 11, pp. 13–28). Springer Heidelberg. doi: 10.1007/978-3-319-23784-8_2

Benevolo, C., Dameri, R. P., & D'Auria, B. (2016b). Smart mobility in smart city action taxonomy, ICT intensity and public benefits. In Lecture Notes in Information Systems and Organisation (Vol. 11, pp. 13–28). Springer Heidelberg. doi: 10.1007/978-3-319-23784-8_2

Bokolo, A. J. (2022). Exploring data driven initiatives for smart city development: empirical evidence from techno-stakeholders' perspective. *Urban Research and Practice*, *15*(4), 529–560. doi: 10.1080/17535069.2020.1869816

Borkamo, H. L. (2022). *User acceptance and mental models-exploring citizens perceptions of autonomous buses in the Arctic region*. Nord University .

Broccardo, L., Culasso, F., & Mauro, S. G. (2019). Smart city governance: exploring the institutional work of multiple actors towards collaboration. *International Journal of Public Sector Management*, *32*(4), 367–387. doi: 10.1108/IJPSM-05-2018-0126

Cai, Y. (2015). What contextual factors shape 'innovation in innovation'? Integration of insights from the Triple Helix and the institutional logics perspective. *Social Science Information*, *54*(3), 299–326. doi: 10.1177/0539018415583527/ASSET/IMAGES/LARGE/10.1177_0539018415583527-FIG2.JPEG

Cai, Y., & Mountford, N. (2022). Institutional logics analysis in higher education research. *Studies in Higher Education*, *47*(8), 1627–1651. doi: 10.1080/03075079.2021.1946032

Calzada, I. (2020). Democratising smart cities? Penta-helix multistakeholder social innovation framework. *Smart Cities*, *3*(4), 1145–1173. doi: 10.3390/smartcities3040057

Carayannis, E. G., & Campbell, D. F. J. (2018). *Smart Quintuple Helix Innovation Systems : How Social Ecology and Environmental Protection Are Driving Innovation, Sustainable Development and Economic Growth*. Springer International Publishing AG.

Cardullo, P., & Kitchin, R. (2019). Smart urbanism and smart citizenship: The neoliberal logic of 'citizen-focused' smart cities in Europe. *Environment and Planning C: Politics and Space*, *37*(5), 813–830. doi: 10.1177/0263774X18806508

Casady, C. B., & Baxter, D. (2020). Pandemics, public-private partnerships (PPPs), and force majeure | COVID-19 expectations and implications. *Construction Management and Economics*, *38*(12), 1077–1085.

Chang, H., Mikalsen, K. S., Erdal, O. B., & Nesse, P. J. (2020). Digitalization of Municipalities Through Ecosystem Collaboration. *Nordic and Baltic Journal of Information and Communications Technologies*, *1*, 117–158. doi: 10.13052/nbjict1902-097x.2020.006

Corsaro, D., & Snehota, I. (2011a). Alignment and misalignment in business relationships. *Industrial Marketing Management*, *40*(6), 1042–1054. doi: 10.1016/j.indmarman.2011.06.038

Corsaro, D., & Snehota, I. (2011b). Alignment and misalignment in business relationships. *Industrial Marketing Management*, *40*(6), 1042–1054. doi: 10.1016/j.indmarman.2011.06.038

Datta, A. (2018). The digital turn in postcolonial urbanism: Smart citizenship in the making of India's 100 smart cities. *Transactions of the Institute of British Geographers*, *43*, 405–419.

Docherty, I., Marsden, G., & Anable, J. (2018). The governance of smart mobility. *Transportation Research Part A: Policy and Practice*, *115*, 114–125. doi: 10.1016/J.TRA.2017.09.012

Easterby-Smith, M., Thorpe, R., & Jackson, P. R. (2015). *Management and Business Research* (5th ed.). Sage Publications.

Ebrahim, A., Battilana, J., & Mair, J. (2014). The governance of social enterprises: Mission drift and accountability challenges in hybrid organizations. *Research in Organizational Behavior*, *34*, 81–100. doi: 10.1016/J.RIOB.2014.09.001

Etzkowitz, H. (2003). Innovation in innovation: the Triple Helix of University-Industry-Government Relations. *Social Science Information*, *42*(3), 293–337.

Flügge, B. (2017). The mobility ecosystem. In Smart Mobility - Connecting Everyone: Trends, Concepts and Best Practices (pp. 47–68). Springer Fachmedien Wiesbaden. doi: 10.1007/978-3-658-15622-0_3

Fung, A. (2015). Putting the Public Back into Governance: The Challenges of Citizen Participation and Its Future. *Public Administration Review*, *75*(4), 513–522. doi: 10.1111/puar.12361

Giffinger, R., Fertner, C., Kramar, H., & Meijers, E. (2007). City-ranking of European medium-sized cities. *Cent. Reg. Sci. Vienna UT*, *9*, 1–12.

Gioia, D., Corley, K., & Hamilton, A. (2013). Seeking qualitative rigor in inductive research: Notes on the Gioia Methodology. *Organizational Research Methods*, *16*, 15–31.

Gohari, S., Baer, D., Nielsen, B. F., Gilcher, E., & Situmorang, W. Z. (2020). Prevailing approaches and practices of citizen participation in smart city projects: Lessons from Trondheim, Norway. *Infrastructures*, *5*(4). doi: 10.3390/INFRASTRUCTURES5040036

Greenwood, R., Oliver, C., Lawrence, T. B., & Meyer, R. E. (2017). *The SAGE handbook of organizational institutionalism*. Sage Publications .

Greenwood, R., Oliver, C., Suddaby, R., & Sahlin, K. (2008). *The SAGE Handbook of Organizational Institutionalism*.

Grossi, G., Dobija, D., & Strzelczyk, W. (2020). The Impact of Competing Institutional Pressures and Logics on the Use of Performance Measurement in Hybrid Universities. *Public Performance and Management Review*, *43*(4), 818–844. doi: 10.1080/15309576.2019.1684328

Grossi, G., Meijer, A., & Sargiacomo, M. (2020). A public management perspective on smart cities: 'Urban auditing' for management, governance and accountability. In Public Management Review (Vol. 22, Issue 5, pp. 633–647). Taylor and Francis Ltd. doi: 10.1080/14719037.2020.1733056

Grossi, G., & Pianezzi, D. (2017). Smart cities: Utopia or neoliberal ideology? *Cities*, *69*, 79–85. doi: 10.1016/j.cities.2017.07.012

Guedes, A. L. A., Alvarenga, J. C., Goulart, M. dos S. S., y Rodriguez, M. V. R., & Soares, C. A. P. (2018). Smart cities: The main drivers for increasing the intelligence of cities. *Sustainability (Switzerland)*, *10*(9). doi: 10.3390/su10093121

Hollands, R. G. (2008). Will the real smart city please stand up? Intelligent, progressive or entrepreneurial? *City*, *12*(3), 303–320. doi: 10.1080/13604810802479126

Hollands, R. G. (2015). Critical interventions into the corporate smart city. *Cambridge Journal of Regions, Economy and Society*, *8*, 61–77.

Hossain, M., Leminen, S., & Westerlund, M. (2019). A systematic review of living lab literature. In Journal of Cleaner Production (Vol. 213, pp. 976–988). Elsevier Ltd. doi: 10.1016/j.jclepro.2018.12.257

Ingstrup, M. B., Aarikka-Stenroos, L., & Adlin, N. (2021). When institutional logics meet: Alignment and misalignment in collaboration between academia and practitioners. *Industrial Marketing Management*, *92*, 267–276. doi: 10.1016/j.indmarman.2020.01.004

Jang, S. gil, & Gim, T. H. T. (2022). Considerations for Encouraging Citizen Participation by Information-Disadvantaged Groups in Smart Cities. *Sustainable Cities and Society*, *76*, 103437. doi: 10.1016/J.SCS.2021.103437

Joss, S., Sengers, F., Schraven, D., Caprotti, F., & Dayot, Y. (2019). The Smart City as Global Discourse: Storylines and Critical Junctures across 27 Cities. *Journal of Urban Technology*, *26*(1), 3–34. doi: 10.1080/10630732.2018.1558387

Koppenjan, J., & de Jong, M. (2018). The introduction of public–private partnerships in the Netherlands as a case of institutional bricolage: The evolution of an Anglo-Saxon transplant in a Rhineland context. *Public Administration*, 171–184.

Kornberger, M., Meyer, R. E., Brandtner, C., & Höllerer, M. A. (2017). When Bureaucracy Meets the Crowd: Studying "Open Government" in the Vienna City Administration. *Organization Studies*, *38*(2), 179–200. doi: 10.1177/0170840616655496

Lazarus, J., Shaheen, S., Young, S. E., Fagnant, D., Voege, T., Baumgardner, W., Fishelson, J., & Sam Lott, J. (2017). *Shared Automated Mobility and Public Transport*. doi: 10.1007/978-3-319-60934-8_13

Lind, F., Styhre, A., & Aaboen, L. (2013). Exploring university-industry collaboration in research centres. *European Journal of Innovation Management*, *16*(1), 70–91. doi: 10.1108/14601061311292869

Liu, T., Mostafa, S., Mohamed, S., & Nguyen, T. S. (2021). Emerging themes of public-private partnership application in developing smart city projects: a conceptual framework. *Built Environment Project and Asset Management*, *11*(1), 138–156. doi: 10.1108/BEPAM-12-2019-0142

Lombardi, P., Giordano, S., Farouh, H., & Yousef, W. (2012). Modelling the smart city performance. *Innovation: The European Journal of Social Science Research*, *25*(2), 137–149. doi: 10.1080/13511610.2012.660325

Lukka, K., & Wouters, M. (2022). Towards interventionist research with theoretical ambition. *Management Accounting Research*, *55*. doi: 10.1016/j.mar.2022.100783

Lundberg, H., & Andresen, E. (2012). Cooperation among companies, universities and local government in a Swedish context. *Industrial Marketing Management*, *41*(3), 429–437. doi: 10.1016/j.indmarman.2011.06.017

Mantere, S., & Ketoviki, M. (2013). REASONING IN ORGANIZATION SCIENCE on JSTOR. *The Academy of Management Review*, *38*(1), 70–89. Retrieved from https://www-jstor-org.ezproxy.nord.no/stable/23416303#metadata_info_tab_contents

March, H., & Ribera-Fumaz, R. (2016). Smart contradictions: The politics of making Barcelona a Self-sufficient city. *European Urban and Regional Studies*, *23*(4), 816–830. doi: 10.1177/0969776414554488/ASSET/IMAGES/LARGE/10.1177_0969776414554488-FIG2.JPEG

Meijer, A. (2018). Datapolis: A Public Governance Perspective on "smart Cities." *Perspectives on Public Management and Governance*, *1*(3), 195–206. doi: 10.1093/ppmgov/gvx017

Meijer, A., & Bolívar, M. P. R. (2016). Governing the smart city: a review of the literature on smart urban governance. *International Review of Administrative Sciences*, *82*(2), 392–408. doi: 10.1177/0020852314564308

Meyer, R. E., & Höllerer, M. A. (2010). MEANING STRUCTURES IN A CONTESTED ISSUE FIELD: A TOPOGRAPHIC MAP OF SHAREHOLDER VALUE IN AUSTRIA. *The Academy of Management Journal*, *53*(6), 1241–1262.

Milakis, D., & Müller, S. (2021). The societal dimension of the automated vehicles transition: Towards a research agenda. *Cities*, *113*, 103144. doi: 10.1016/J.CITIES.2021.103144

Mora, L., Deakin, M., & Reid, A. (2019). Strategic principles for smart city development: A multiple case study analysis of European best practices. *Technological Forecasting and Social Change*, *142*, 70–97.

Munhoz, P. A. M. S. A., Dias, F. da C., Chinelli, C. K., Guedes, A. L. A., dos Santos, J. A. N., E Silva, W. da S., & Soares, C. A. P. (2020). Smart mobility: The main drivers for increasing the intelligence of urban mobility. *Sustainability (Switzerland)*, *12*(24), 1–25. doi: 10.3390/su122410675

Munhoz, P. A. M. S. A., Dias, F. da C., Chinelli, C. K., Guedes, A. L. A., Neves dos Santos, J. A., Wainer, da S. e S., & Pereira Soares, C. A. (2020). Smart Mobility: The Main Drivers for Increasing the Intelligence of Urban Mobility. *Sustainability*, *12*(24). doi: 10.3390/su122410675

Nam, T., & Pardo, T. A. (2014). The changing face of a city government: A case study of Philly311. *Government Information Quarterly*, *31*(SUPPL.1), S1–S9. doi: 10.1016/J.GIQ.2014.01.002

Öberg, C., & Shih, T. T. Y. (2014). Divergent and convergent logic of firms: Barriers and enablers for development and commercialization of innovations. *Industrial Marketing Management*, *43*(3), 419–428. doi: 10.1016/j.indmarman.2013.12.010

Ocasio, W., Thornton, P., & Lounsbury, M. (2017). Advances to the institutional logics perspective. In R. Greenwood, C. Oliver, T. B. Lawrence, & R. E. Meyer (Eds.), The Sage handbook of organizational institutionalism (2nd ed., pp. 509–531). London: SAGE Publications.

Paier, M., & Scherngell, T. (2011). Industry and Innovation Determinants of Collaboration in European R&D Networks: Empirical Evidence from a Discrete Choice Model. *Industry and Innovation*, *18*(1), 89–104. doi: 10.1080/13662716.2010.528935

Paiva, S., Ahad, M. A., Tripathi, G., Feroz, N., & Casalino, G. (2021). Enabling technologies for urban smart mobility: Recent trends, opportunities and challenges. In Sensors (Vol. 21, Issue 6, pp. 1–45). MDPI AG. doi: 10.3390/s21062143

Pansera, M., Marsh, A., Owen, R., Flores López, J. A., & de Alba Ulloa, J. L. (2022). Exploring Citizen Participation in Smart City Development in Mexico City: An institutional logics approach. *Organization Studies*, 017084062210941. doi: 10.1177/01708406221094194

Perkmann, M., Mckelvey, M., & Phillips, N. (2019). Protecting Scientists from Gordon Gekko: How Organizations Use Hybrid Spaces to Engage with Multiple Institutional Logics. *Organization Science*, *30*(2), 298–318. doi: 10.1287/orsc.2018.1228

Pianezzi, D., Mori, Y., & Uddin, S. (2021). Public–private partnership in a smart city: A curious case in Japan. *International Review of Administrative Sciences*. doi: 10.1177/00208523211051839

Pollitt, C., & Bouckaert, G. (2017). *Public management reform: a comparative analysis-into the age of austerity*. Oxford: Oxford University Press.

Quélin, B. v., Kivleniece, I., & Lazzarini, S. (2017). Public-Private Collaboration, Hybridity and Social Value: Towards New Theoretical Perspectives. *Journal of Management Studies*, *54*(6), 763–792. doi: 10.1111/joms.12274

Reay, T., & Hinings, C. R. (2009). Managing the rivalry of competing institutional logics. *Organization Studies*, *30*(6), 629–652. doi: 10.1177/0170840609104803

Saunders, M., Lewis, P., Thornhill, A., Lewis, S. •, & Thornhill, •. (2009). *Research methods for business students fi fth edition*. Retrieved from www.pearsoned.co.uk

Saz-Carranza, A., & Longo, F. (2012). Managing competing institutional logics in public-private joint ventures. *Public Management Review*, *14*(3), 331–357. doi: 10.1080/14719037.2011.637407

Schaffers, H., Komninos, N., Pallot, M., Trousse, B., Nilsson, M., & Oliveira, A. (2011). Smart Cities and the Future Internet: Towards Cooperation Frameworks for Open Innovation. In The Future Internet (pp. 431–446). Springer. doi: 10.1007/978-3-642-20898-0_31

Schmidt, J. E. T., & Groeneveld, S. M. (2021). Setting sail in a storm: leadership in times of cutbacks. *Public Management Review*, *23*(1), 112–134. doi: 10.1080/14719037.2019.1668472

Schulz, T., Böhm, M., Gewald, H., Celik, Z., & Krcmar, H. (2020). The Negative Effects of Institutional Logic Multiplicity on Service Platforms in Intermodal Mobility Ecosystems. *Business and Information Systems Engineering*, *62*(5), 417–433. doi: 10.1007/s12599-020-00654-z

Shelton, T., & Lodato, T. (2019). Actually existing smart citizens. *City*, *23*(1), 35–52. doi: 10.1080/13604813.2019.1575115

Steijn, B., Klijn, E. H., & Edelenbos, J. (2011). PUBLIC PRIVATE PARTNERSHIPS: ADDED VALUE BY ORGANIZATIONAL FORM OR MANAGEMENT? *Public Administration*, *89*(4), 1235–1252. doi: 10.1111/J.1467-9299.2010.01877.X

Suomala, P., & Lyly-Yrjänäinen, J. (2011). *Management Accounting Research in Practice : Lessons Learned from an Interventionist Approach* (1st ed.). Taylor & Francis Group.

Thornton, P. H., Ocasio, W., & Lounsbury, M. (2012). *The Institutional logics Perspective: A new approach to culture, Structure, and Process*. Oxford: Oxford University Press.

Vanolo, A. (2014). Smartmentality: The Smart City as Disciplinary Strategy. *Urban Studies*, *51*(5), 883–898. doi: 10.1177/0042098013494427

Veselitskaya, N., Karasev, O., & Beloshitskiy, A. (2019). Drivers and Barriers for Smart Cities Development. *Theoretical and Empirical Researches in Urban Management*, *14*(1), 85–110.

Viale Pereira, G., Cunha, M. A., Lampoltshammer, T. J., Parycek, P., & Testa, M. G. (2017). Increasing collaboration and participation in smart city governance: a cross-case analysis of smart city initiatives. *Information Technology for Development*, *23*(3), 526–553. doi: 10.1080/02681102.2017.1353946

Villani, E., Greco, L., & Phillips, N. (2017). Understanding Value Creation in Public-Private Partnerships: A Comparative Case Study. *Journal of Management Studies*, *54*(6), 876–905. doi: 10.1111/joms.12270

Yin, R. K. (2018). *Case study research and applications: Design and methods*. SAGE.

Yuen, K. F., Ling, ·, Choo, Q., Li, X., Yiik, ·, Wong, D., Ma, F., & Wang, X. (2022). A theoretical investigation of user acceptance of autonomous public transport. *Transportation*. doi: 10.1007/s11116-021-10253-w

Zhang, Y. (2022). Exploring interfirm collaboration processes of small- and medium-sized enterprises: an institutional logics perspective. *Entrepreneurship and Regional Development*. doi: 10.1080/08985626.2022.2103745

Appendices

Appendix 1: Semi-structured Interview Guide

This interview guide provides you, the participant, with information about the research that will be conducted in relation to the master thesis. Below, you will find a short description of the research and the interview topics.

<u>Research Description:</u>

Smart city projects require collaboration among actors from different sectors for development and implementation. The type of partnerships and the number of partners involved varies depending on the project scale and scope. Previous research provides different frameworks and textbook of ideal ways for collaborations and best practices. But most of this is in theory and with the rise of smart cities and the complexity of the projects, there is still much we don't know about how different actors collaborate together in these partnership projects in practice instead of just looking at what is written in a textbook.

This thesis is explorative research into how different actors collaborate in the development of a smart city, in particular the smart mobility agenda which requires partnership between the public administration, businesses, academia, and the local community.

<u>Interview Topics:</u>

Topic 1: exploring collaborations and partnerships with other project partners in the smart mobility project.

Topic 2: reflecting on interactions and experiences with other project partners.

Topic 3: challenges based on your experience

Closing Questions

Interview Questions

1. **Exploring the dynamics of collaborations and partnerships with other project partners in the smart mobility project**

- Could you tell me about the work you're doing in this project? Other partners you work with? How did collaboration within the project work?

- What were your expectations/objectives going in this project? Have they changed? If yes, what was the reason for the changes?

- What has been your impression of the partnership project?

- Each partner in the project has its own goals/objectives to achieve. have you experienced a situation there's been a clash because of differing goals/ways about doing a certain thing?

- Are there different practices/standards that each partner has? Has it affected the work, the processes, end goal? How?

- Citizens are also involved in certain parts of the project. How does their input/feedback/involvement affect your work?

2. **Reflecting on interactions and experiences with other project partners**

- Can you think of a situation/work that you did with other partners, and it went well.

    - What happened?

    - Why do you think it worked?

- Can you think of a situation that didn't go as planned.

    - Why do you think it didn't go as planned?

    - How did you manage to cope with the situation?

    - How would that situation need to be different so that it doesn't happen again?

    - what was the difference between this situation & the other ones?

- Can you think of a time when the rules/standards/practices of your own organization clashed with another partner's?

    - describe the situation. How did you resolve it?

- Describe an ideal partnership?
  - What does it look like to you?
  - What would have to happen or be in place for this to work?
  - What do you wish the other partners would be mindful of?

3. **Challenges the actor faced in their interactions with other project partners**

   Depending on the whom the actor was:

- How were the interactions with public administration/ academia/businesses/citizens?
- What matters should be paid attention to when different actors work together?
- Going forward what challenges do you see?

4. **Closing questions**
- Is there anything more you would like to share/add?
- Is there something that you think that is relevant that I didn't ask about?

Appendix 2: Data Structure Table

1st order codes	2nd order codes
Actor goals and interests	Institutional logics
Actor practices and cognition	
Development of sustainable transport solutions	Actor-type level alignment (Between public administration actors)
Clear definition of work scope and project goals	Relationship level alignment (Between two different actors)
Having the right people onboard the project	
Open dialogue between the actors	
Trust between partners	
Willingness to learn through trial and error	
Consensus on developing new sustainable transport solutions	System level alignment (Between all actors)
Circular flow of knowledge and feedback between actors	
Openness to dialogue and communications	
Working with end users helped narrow down value proposition/target groups	
Lack of communication & coordination of activities between public administration departments	Actor-level tensions and challenges (Between public administration actors)
Data silos in municipal departments	
Lack of standardization of data & a common data formats	
Slow internal procedures & decision-making processes	

Slow internal procedures & decision-making processes	
Lack of communication & coordination between private & public actors	Relationship-level tensions and challenges
Bureaucracy and politics of public administration affecting commitment, budgets, and timelines	
Lack of local presence of business actors affected local knowledge about the project by citizens	
Data/application ownership concerns	
Difficulties in engaging with citizens as end-users for testing	System level tensions and challenges
Rules and regulations governing new technology	
COVID-19 affected budgets, priorities, commitments, material sourcing	